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University College of Business Studies

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Editorial

'Business Studies', the refereed journal of the Commerce Department, Calcutta University, compiles both descriptive and empirical thought-provoking articles in the field of finance, economics, accounting and management within the periphery of commerce and business. Accordingly, this combined 35th and 36th volume of *Business Studies* presents before the readers ten insightful papers in diverse areas such as banking, micro-finance and capital market from the field of finance, accounting in relation to Government sector, environmental impact of coal ash emission from thermal power station, consumerism in the context of working wives, implications of legislation on limited liability partnership in India, and state of primary education and rural employment structure in West Bengal within the realm of socio-economic aspects of business. The papers have been arranged in view of the perceived link in their contents so as to retain the universal appeal of the research volume. The first paper analyses in-depth the contribution of Indian commercial banks towards industrial financing during its pre-liberalization period. Moving on from the pre-liberalization scenario, the second paper examines the role of modern-day state cooperative banks in economic development of rural India by judging their efficiency using statistical tools such as Data Envelopment Analysis (DEA) and multiple regression analysis. In the third paper, the problems in the micro-finance sector, in general, and the present scenario of client protection mechanism in particular reference to the Indian micro-finance institution–Arohan, are examined. The prediction of future stock price movement has always fascinated investors, analysts and researchers alike; but randomness in stock price behavior acts as an impediment to such prediction. Accordingly, the fourth paper revisits random walk hypothesis to identify empirically whether Indian stock market can be considered efficient in at least weak form. From the field of accounting, the fifth paper identifies the problem areas and prescribes solution for an eventual switch from cash to accrual basis of accounting based on a case analysis of Directorate of State Lotteries, Government of West Bengal. The environmental and social impact of coal ash emitted from Kolaghat Thermal Power Station under West Bengal Power Development Corporation in India is evaluated in the sixth paper based on a primary survey. The seventh paper undertakes a primary survey based empirical study to understand the behavior of working wives as consumers in the family purchase decision making process. The concept of Limited Liability Partnership (LLP), possessing characteristics of both partnership and corporate structure, is a recent introduction in India. However, whether such limited liability of partners would be beneficial to third parties and would protect all stakeholders' interest, or any modification is needed in LLP legislation introduced in 2008 are the issues of primary survey based research in the eighth paper. Touching upon an intriguing social aspect of business, the ninth paper examines the trends in diversification of rural employment structure in West Bengal and brings out the inter-district and gender disparities on the basis of NSSO and Census data. Finally, in continuation of the wider perspective of the society, the tenth paper critically examines the nature and dimension of disparities–regional and otherwise, in diffusion of primary education in West Bengal based on secondary data.

We sincerely hope that all the articles published in this edition of the Departmental journal will be of keen interest to our valued readers, and will enrich their knowledge base and stimulate their intellect. We would also encourage you to participate in the ongoing debate on the above and other related research themes in the field of accounting, finance, economics and management by contributing your research work to this journal.

Tanupa Chakraborty
Associate Editor

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Commercial Banks and Industrial Finance in India: The Pre-Liberalisation Scenario

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Abstract: Development of industry is an essential prerequisite for the development of the economy of a country. Needless to say that it is absolutely imperative to have a proper supply of finance for the industrial sector to develop and prosper. Commercial banks, *inter alia*, of a country have to play a pivotal role in this respect, especially when the economy is a budding one. The economy of India has grown at a rapid pace since the economic liberalisation process took off in 1991-92. With the onset of this process, the capital market in India snowballed and has become a major source of industrial finance. But one must not forget that in the pre-liberalisation era, the underpinning in this respect was provided mainly by the commercial banks. With this in view, this paper attempts to analyse in-depth their contribution prior to the incipience of economic liberalisation since the infancy of modern day banking in India.

Key-words: Commercial banking, sectoral deployment, bank advances, underwriting.

1. Introduction

It is a known fact that from very early times there existed in India a reasonably developed mechanism of banking and credit by contemporary standards, capable of fulfilling the needs of the then Indian society. The *Vedas*, *Manusmriti* and Kautilya's *Arthashastra* bear testimony to the existence and efficient functioning of banking in ancient India. "From all this it is obvious that India possessed for all times known to history a system of banking which admirably fulfilled her needs and proved very beneficial to her, although its methods were different from those of modern Western banking" (*Garg, 1964*).

The method of banking that existed in India in those days consisted of money lending and transfer of monetary claims through Hundis from one place to another. "The use of credit instruments is also quite old in India and Hundi, the indigenous credit instrument, has been in vogue for a very long time. In our early history one comes across references to bankers whose Hundis were honoured throughout the length and breadth of the country" (*Ghoshal and Sharma, 1965*). The banking system carried on by individuals known as 'Shresthis' and 'Sahukars' served the needs of primitive and medieval agriculture, industry and trade. These bankers were also the bankers of the native rulers. The house of Jagat Seths, the hereditary bankers of the Nawab of Bengal, was founded as early as in 1715 (*Sinha, 1927*).

With the arrival of the East India Company in India the modern era of trade and commerce commenced. The British businessmen, conversant with the banking system that was in existence in their country at that time, found it inconvenient to carry on their activities in India as the indigenous bankers were either incapable or unwilling to extend banking or credit facilities to them. Thus, in order to meet the requirements of English businessmen, the Managing Agency houses of Calcutta and Bombay gradually extended their horizon of operation to include banking. In fact, the entry of the Managing Agency Houses into the arena of banking marked the emergence of the practice of British commercial banking in India. The earliest example of such banks in India was the Bank of Hindostan, established in Calcutta by Messrs. Alexander & Co. in 1770 and that was also the first public bank of the country.

The second wave of banking development came at the beginning of the nineteenth century with the establishment of the first Presidency Bank, the Bank of Calcutta, in 1806. Two more Presidency Banks, the Bank of Bombay and the Bank of Madras were established in 1840 and 1843 respectively. The Presidency Banks acted as the bankers of the Government and had the right of issuing currency notes till 1862. These banks also served the interest of the East India Company and British businessmen till their merger and the formation of the Imperial Bank of India in 1921.

Modern joint stock banking in India may be said to have begun from 1860 when the concept of limited liability was made applicable to the banking business by the Companies Act of 1860, which followed the English Act of 1858 (Rungta, 1970). Since the passing of the Companies Act of 1860, large number of banking and loan companies were established. In 1895-96 there existed 299 such banking and loan companies, but most of those companies were so small that they were no more than small savings and loan societies. Thus, the progress of modern organised banking was not very satisfactory; by the end of the century there were three Presidency Banks, eight Exchange Banks and nine Indian Joint Stock Banks, besides a number of small savings and loan societies. The Presidency Banks, as has already been mentioned, were semi-Government institutions. The Exchange Banks, owned by foreigners, engaged themselves primarily in the international trade of India and the Joint Stock Banks, owned mainly by the Indians, confined themselves primarily to the internal trade.

2. State of Industrial Finance in India

The modern banking system, developed in India under the initiative and enterprise of those who were conversant with the British counterpart, naturally followed the orthodox British system. The banking system arose out of the requirements of foreign investors who transacted business in India, mainly foreign trade, and remitted money to their country. "They needed a modern banking system to carry out the processes of foreign trade–most important, to transfer foreign exchange or to supply it, and also to meet credit requirements between order and payment. ...The English investors normally invested their own resources and ploughed back their earnings. ...There was little demand for long–term credit under such circumstances; the banks maintained their English character as institutions for the supply of short-term credit" (*Rosen, 1962*).

Indian businessmen, who began to shift from commerce to industry under the stimuli of examples set by the foreigners or self-recognised opportunities, also experienced inconvenience in financing their ventures without support from the banking system. In the absence of issue houses and investment banks, the Indian entrepreneurs were neither in a position to get their shares and debentures underwritten nor was there any supply of finance specially for meeting the long-term needs. The Indian entrepreneurs, however, did not lag behind. A number of Indian-owned banks were set up, in some cases, by the entrepreneurs themselves for ensuring the supply of fund to the ventures owned or patronised by them. "Many of the banking, insurance, and finance companies were under the domination or influence of particular business houses, giving rise to a system of what may be called 'captive' financial institutions which were integral parts of financial and industrial complexes" (*Gupta, 1969*). Such chain holding of financial and industrial companies gave birth to a system of individual or family control over a number of industries, which ultimately paved the way for investment of profits of industries under the same ownership among themselves. Thus, the long-term financial needs of the industries under the big business houses were met to a considerable extent from the internal sources and the banks were ultimately allowed to follow the British system of supplying only short-term working capital. The Indian-owned banks, modelled on the British, thus performed a similar function– the supply of short-term credit against tangible, rapidly turned over assets in the form of stocks of raw materials and finished products.

Demand for fostering indigenous industries, however, gained momentum with the onset of the twentieth century under the influence of the Swadeshi Movement. Ambition of industrial development, strengthened by the spirit of the Swadeshi Movement, led to the establishment of a number of banks in different parts of the country particularly for meeting the needs of indigenous industries. Attempts at such industrial financing were made for the first time by a number of commercial banks, mostly in the Punjab, during the Swadeshi movement of 1906-13. Instead of pursuing the orthodox system of commercial banking, these banks freely subscribed to the shares and debentures of the industrial companies set up by the Indians and also granted loans and advances against the mortgage of real estates and capital goods. The new Joint Stock Banks undertook varied types of business, including industrial financing and developed an unmistakable tendency to provide long-term finance to industry. But these banks, popularly known as Swadeshi Banks, had a very brief history of operation. A large number of these banks failed during the crisis of 1913-15. The founders of these banks were mostly enthusiastic Indians without any experience in banking or industrial finance, nor did they pay due regard to known principles and practices of investment banking. They were primarily deposit banks and the policy of locking up almost the whole of their resources in long-term industrial investments, unrealisable at the time of a crisis, was inevitably followed by disastrous consequences.

During the boom that followed the First World War, a number of commercial banks were promoted to provide long-term finance to the companies set up by the Indian entrepreneurs. The promoters of these banks were moved by the role played by the Japanese and German industrial banks in the spectacular industrial development of those countries. But whatever might have been there in the minds of the promoters, these banks were far from well-conceived industrial banks. A perusal of their Memoranda and Articles of Association shows that they intended to pursue every variety of ordinary banking business and couple with it issue, investment trust and real estate mortgage business.

Undaunted by the massive periodic failures, the search for an appropriate system of industrial financing institutions continued. Formation of the Imperial Bank of India in 1921 and the establishment of the Reserve Bank of India in 1934 failed to provide any solution to the problem in the absence of a definite policy for industrial development and a plan for realising the goal. Thus, at the start of the programme of industrialisation after independence, India had a large unorganized money market which met the demands for funds on the part of the rural and poor urban population; an almost unrelated modern banking system, the main purpose of which was to supply the short-term capital needs of firms whose longer term requirements were largely met from the internal sources of the firm or the ownership group; and a security market which contributed to meeting the longer term investment needs of only a few firms.

3. Commercial Banking in India since Independence: Trends and Progress

An analysis of the policy of commercial banks with respect to the financing of industrial development in the period since the independence of India must be preceded by a brief account of the various types of commercial banks, their relative importance and their lending practices.

In India there are scheduled banks and non-scheduled banks. Scheduled banks are banks that are included in the Second Schedule of the RBI Act, 1934 having paid-up capital and reserves of an aggregate value of Rs. 5 lakh and above. Such banks must maintain a minimum reserve with the Reserve Bank of India and have the right to borrow from it under different circumstances. The non-scheduled banks, on the other hand, are smaller banks with paid-up capital and reserve below Rs. 5 lakh. These banks are not required to maintain any reserve with the Reserve Bank of India, but can borrow from it only under special circumstances. Both the scheduled and non-scheduled banks are under the control of the Reserve Bank of India. The control of the Reserve Bank of India has been strengthened by the Banking Companies Act of 1949 and the nationalisation of the Reserve Bank of India in the preceding year. In this context, it may be noted that since May 1997 there does not exist any non-scheduled commercial bank in India, although there are some non-scheduled cooperative banks.

From the point of view of the number of banks and the volume of business transacted, the non-scheduled banks occupy a very insignificant position. From Table 1 it can be found that over the years from 1951 onwards, the non-scheduled banks have lost their significance steadily both in terms of attracting deposits and extending credit. In 1970, the non-scheduled banks attracted only 0.45 per cent of the deposits and extended 0.27 per cent of credit of both the categories of banks taken together.

Table-1 : Commercial Banking Trends at a Glance
(As on the last Friday of June)

(Rs. Crore)

	1951	**1961**	**1967**	**1970**
No. of Banks:				
i) Scheduled Banks	92	84	74	72
ii) Non-Scheduled Banks	474	249	24	14
Deposits:				
i) Scheduled Banks	918.1	1775.8	3517.0	5239.8
ii) Non-Scheduled Banks	69.9	43.4	24.5	23.5
Bank Credit:				
i) Scheduled Banks	545.1	1282.8	2631.1	4227.6
ii) Non-Scheduled Banks	45.8	27.6	15.1	11.3

Sources: 1) Reserve Bank of India: *Annual Report on the Working of the Reserve Bank of India and Trend and Progress of Banking in India, June 30, 1970, Bombay.*

2) Reserve Bank of India: *Statistical Tables Relating to Banks in India, 1953, Bombay.*

The scheduled banks also include the branches of foreign banks which were centred in and around the port cities for facilitating the financing of foreign trade. Since 1947, the situation has changed considerably. Now the branches of foreign banks are taking part in internal banking business as well and the Indian scheduled banks are also taking an interest in foreign trade. Thus, side by side, with expansion in the volume of business, the scheduled banks have also extended the scope of their operations. The non-scheduled banks, on the other hand, serve mainly the rural and unorganised sector. In the context of the above analysis, our examination of the role of commercial banks in the supply of industrial finance would naturally include only the scheduled commercial banks.

Indian banking made considerable progress during and after the Second World War. But it was not sufficient to meet the requirements of a vast country like India. A small number of big banks concentrated their operations mostly in the urban areas, whereas the vast rural areas remained either completely unbanked or were banked by a few smaller banks with meagre financial resources. Hence, in order to consolidate the banking system, a policy of merging the non-viable units with the viable ones was followed. This led to a reduction in the number of banks in the subsequent years. Simultaneously, however, the branches of scheduled commercial banks were opened in the unbanked or meagrely banked rural areas. The twin policy of strengthening the banking system and extending the area of operation of the organised banking was successfully pursued, through the formation of the State Bank of India in 1955 and the nationalisation of the fourteen major commercial banks in July, 1969.

From Table 2 it would appear that since nationalisation in 1969, the commercial banking recorded an all-round progress. Through the opening of new branches, the commercial banks were able to go nearer to the people and mobilise their precious savings for use in productive purposes. While the deposits of commercial banks during the period increased by more than 51 times, the number of people served by each office of commercial banks decreased from 64,000 to 14,000 only. This necessarily means that there was also qualitative improvement in the services of the commercial banks. Increase in per capita deposits by more than 31 times conclusively proves the ability of nationalised banks in mobilising the savings of the people by going nearer to them. In fact, the all-round progress of the commercial banks since nationalisation demonstrated the confidence of the society in the economic philosophy which did away with the domination and control of banks by large business houses.

Table-2 : Progress of Commercial Banking at a Glance

Important Indicators	**June 1969**	**June 1984**	**June 1988**	**March 1992**
1. No. of Commercial Banks of which	89	247	278	276
a) Non-Scheduled	16	4	4	4
b) Scheduled	73	243	274	272
of which (RRBs)	(-)	(162)	(196)	(196)
2. No. of Bank Offices in India	8262	45332	55410	60570
3. Population per office (in thousands)	64	16	14	14
4. Deposits of Scheduled Comm. Banks in India of which (Rs. Crore)	4646	64620	126323	237566
a) Demand	2104	12195	21936	48893
b) Time	2542	52425	104387	188672
5. Credit of Scheduled Comm. Banks in India (Rs. Crore)	3599	43613	72436	131520
6. Deposits of Scheduled Comm. Banks per office (Rs. Lakh)	56	143	228	392
7. Credit of Scheduled Comm. Banks per office (Rs. Lakh)	44	96	131	217
8. Per Capita Deposits of Scheduled Comm. Banks (Rs.)	88	878	1586	2738

Source: Reserve Bank of India: *Banking Statistics: Basic Statistical Returns,* Vol. 20, March 1991, Published in February 1993, Bombay.

4. Financial Practice of Indian Commercial Banks: Emerging Trends Toward Industrial Financing in India

Commercial banks are a major source of finance to industry and trade. During the period from 1969 to 1992, the volume of bank credit increased by 36.54 times from Rs. 3599 crore to Rs. 131520 crore. Banks in India mainly provide short-term credit for meeting the working capital needs of the borrowers. This is mainly because of the fact that a substantial portion of the resources of these banks consists of demand and short-term deposits. In actual practice, however, a considerable portion of the short-term bank credit is always renewed and therefore, serves as a substitute for long-term finance. Moreover, quite in tune with the changing practice of commercial banking from 'real bills doctrine' to the 'anticipated income theory', the Indian commercial banks extended the scope of their operations in order to meet the requirements of planned economic development. S.K. Basu wrote in 1980: "Commercial banking today presents a new picture–a picture of innovations in practice, of wider horizons and of new enterprises." Supply of credit for packing, advances against export and import bills, foreign currency loans and cash incentives for export were examples of such innovations. While there were development banks and other financial intermediaries for supplying term loans, the commercial banks also enhanced the supply of term loans to industry. While participation in long term industrial financing has taken place through clearly distinct financial intermediaries and has therefore been indirect, there appears to be a broad trend towards a shift of commercial banks' interest in favour of direct term loans on American lines to trade and industry.

From Table 3 it can be seen that during the period from 1972 to 1991, the composition of outstanding credit of commercial banks underwent very meaningful changes. In the first place, cash credit, the most popular form of bank credit, lost much of its importance and the term loans gained considerable prominence. In 1972, cash credit constituted as much as 50.4 per cent of the outstanding bank credit whereas in 1991, it came down to 35.7 per cent. During the same period, the share of term loans increased from 11.9 per cent to 30.5 per cent of the outstanding bank credit. Again, during the same period, the shares of overdrafts and demand loans declined slightly, but those declines were made good by the addition of new forms of credit granted for specific purposes such as those against foreign currency cheques, etc. and advances against Export Cash Incentives and Duty Drawback claims. Over the period of twenty years, as shown in Table 3, the volume of bank credit increased by more than nineteen times.

Corporate sector of India, the centre of all industrial and business activities, is a deficit sector in the sense that its requirements for new investments cannot be met from its internal sources. Thus, for meeting the deficit, the corporate sector draws upon the surplus of other sectors, particularly the household sector, the commercial banks and other financial institutions.

Table-3 : Distriution of Outstanding Credit of Scheduled Commercial Banks according to Type of Account

(Amount outstanding as on the last Friday)

(Rs. Crore)

Type of Account	Dec. 1972	Dec. 1980	Dec. 1988	March 1991
1. Cash Credit	2544.7 (50.4)	8578.3 (42.4)	22613.2 (38.0)	34554.6 (35.7)
2. Overdrafts	479.7 (9.5)	1345.2 (6.7)	4387.8 (7.4)	7505.0 (7.8)
3. Demand Loans	330.9 (6.6)	981.1 (4.9)	2259.3 (3.8)	3363.8 (3.5)
4. Term Loans	601.1 (11.9)	4492.4 (22.2)	17204.3 (28.9)	29615.6 (30.5)
5. Packing Credit	209.6 (4.1)	754.5 (3.7)	2726.4 (4.6)	4255.6 (4.4)
6. Export Bills Purchased / Discounted / Advanced against	212.4 (4.2)	795.7 (3.9)	1944.6 (3.3)	3642.1 (3.8)
7. Inland Bills Purchased / Discounted	631.9 (12.5)	3056.8 (15.1)	7718.0 (12.9)	10847.9 (11.2)
8. Advances against Import Bills	30.3 (0.6)	217.0 (1.1)	545.2 (0.9)	1269.3 (1.3)
9. Foreign Currency Cheques / TCs / DDs / TTs / MTs purchased	–	–	124.8 (0.2)	1608.3 (1.7)
10. Advances against Export Cash Incentives & Duty Drawback claims	–	–	–	218.2 (0.2)
11. Unclassified	10.8 (0.2)	–	–	–
TOTAL :	5051.4	20221.0	59523.7	96880.4

Note: Figures in brackets indicate percentage to total.

Source: Reserve Bank of India: *Banking Statistics: Basic Statistical Returns*, Vol. 1, 1972; Vol.11, 1980; Vol. 17, 1988; Vol.20, 1991.

Table 4 depicts the composition and the volume of flow of fund to the private corporate sector from various sources from the beginning of the First Five Year Plan to 1990-91.

The table indicates that during the First Plan period, about 15 per cent of the fund required by the private corporate sector had come from the Banking sector. Flow of fund from the banking sector to the private corporate sector increased to 61 per cent in 1966-69 and reached a low point of 23 per cent of its requirements in 1980-81. Since 1981-82, the share of the Banking sector began to increase and by 1988-89 it accounted for the next all-time high of 55 per cent of the total flow of fund to the private corporate sector. Overall proportionate decline in the flow of fund from the Banking sector to the private corporate sector since 1969-70 is attributable to the nationalisation of fourteen major commercial banks in 1969 and the adoption of the policy of providing greater financial support to the priority sector. It is also very interesting to note that the flow of funds from the other financial institutions, which include mainly development banks, increased appreciably during the period. In fact, decline in the flow of fund from the Banking sector during the period was made good, at least to a considerable extent, by increase in the flow of funds from the other financial institutions. Barring the First Five Year Plan period and early 1980s, flow of funds to the private corporate sector from banking and other financial institutions taken together varied between 54 per cent and even one hundred per cent during the period covered by the study.

Table-4 : Flow of Fund to Private Corporate Sector

(Rs. Crore)

Year	Banking	Other Financial Institutions	Govt.	Households	Rest of the World	Others	Total
1951-56	63 (15)	40 (10)	29 (7)	275 (66)	8 (2)	1 (-)	416 (100)
1956-61	363 (44)	82 (10)	95 (12)	281 (34)	61 (7)	-58 (-7)	824 (100)
1961-66	813 (51)	354 (22)	115 (7)	253 (16)	62 (4)	- (-)	1597 (100)
1966-67 to 1968-69	695 (61)	226 (20)	68 (6)	89 (8)	60 (5)	-4 (-)	1134 (100)
1969-70 to 1971-72	450 (43)	211 (20)	143 (13)	292 (28)	-60 (-6)	21 (2)	1057 (100)

Table-4 : Flow of Fund to Private Corporate Sector (*Contd.*)

(Rs. Crore)

Year	Banking	Other Financial Institutions	Govt.	Households	Rest of the World	Others	Total
1980-81	637 (23)	686 (24)	134 (5)	1017 (36)	2 (-)	328 (12)	2804 (100)
1981-82	1641 (28)	1056 (18)	150 (2)	1481 (25)	40 (1)	1579 (26)	5947 (100)
1982-83	1464 (25)	1175 (20)	171 (3)	1716 (30)	48 (1)	1220 (21)	5794 (100)
1983-84	1053 (26)	1320 (32)	101 (3)	519 (13)	37 (1)	1026 (25)	4056 (100)
1984-85	1625 (32)	1406 (28)	-164 (-4)	1178 (24)	76 (2)	904 (18)	5025 (100)
1985-86	2311 (35)	1642 (25)	-35 (-)	1827 (28)	- (-)	789 (12)	6534 (100)
1987-88	2886 (46)	3238 (52)	-69 (-1)	1035 (16)	86 (1)	-892 (-14)	6284 (100)
1988-89	7107 (55)	5502 (42)	-446 (-3)	1362 (10)	451 (3)	-937 (-7)	13039 (100)
1989-90	6373 (44)	8196 (57)	71 (-)	1807 (12)	788 (5)	-2798 (-19)	14437 (100)
1990-91	6067 (41)	8393 (56)	165 (1)	1423 (10)	1029 (7)	-2245 (-15)	14832 (100)

Note: Figures in brackets indicate percentage (in rounded figure) to total.

Sources: a) V.V. Divatia & T.R. Venkatachalam: "Flow of Funds Accounts" in *Reserve Bank of India Staff Occasional Papers,* Vol. No. 2, Dec. 1976, p.129;

b) Reserve Bank of India: *Reserve Bank of India Bulletin,* Bombay, January 1991 and June 1993.

Having analysed the pattern of flow of funds from different sectors to the private corporate sector, it would now be pertinent to analyse the relative importance of the different sources of fund from the point of view of the users of fund, that is, the corporate sector.

The corporate sector secures funds from internal and external sources. Internal sources consist of depreciation fund, retained profit and capitalised reserve, whereas, equity capital raised by new issues and borrowings are the major components of external source of fund. Principal sources of borrowed funds are the commercial banks, other financial institutions and debentures. The optimum combination of internal and external sources depends upon the need and ability of the company as well as upon the conditions of the capital market. How much a company can borrow again depends upon the position of the net worth and projected future level of cash flow.

Table 5 indicates the pattern of flow of funds to the medium and large public limited companies from internal and external sources and from the commercial banks in particular during the period from 1951-1955 to 1990-91. The table has been prepared on the basis of the data published by the Reserve Bank of India on the sample of companies having paid-up capital above Rs. 5 lakh and representing the major portion of the total paid-up capital of pubic limited companies. To make the study a representative one, RBI left out smaller companies with paid-up capital below Rs. 5 lakh and big companies with paid-up capital of Rs. 1 crore and above.

Table-5 : Source of Fund to the Medium and Large Public Limited Companies: 1951-55 To 1990-91

(Rs. Crore)

Years	Total of All Sources	Internal Sources	External Sources		
			Total	Borrowing	Borrowing from Banks
1951-55	443	306 (69.7)	137	58 (13.1)	26 (5.2)
1956-60	1116	624 (55.9)	492	292 (26.2)	181 (16.2)
1961-64	1047	632 (60.4)	415	196 (18.7)	154 (14.7)
1964-65 to 1965-66	843	388 (46.0)	455	279 (33.1)	199 (23.6)
1966-67 to 1970-71	2963	1466 (49.5)	1497	799 (26.8)	497 (16.8)
1971-72 to 1975-76	6021	3104 (51.6)	2917	1214 (20.2)	785 (13.0)
1976-77 to 1981-82	14456	5432 (37.6)	9024	4386 (30.3)	1791 (12.4)

Table-5 : Source of Fund to the Medium and Large Public Limited Companies: 1951-55 To 1990-91 (*Contd.*)

(Rs. Crore)

Years	Total of All Sources	Internal Sources	External Sources		
			Total	Borrowing	Borrowing from Banks
1982-83 to 1984-85	9975	3635 (36.4)	6340	3552 (35.6)	1020 (10.2)
1985-86 to 1987-88	21805	7193 (33.0)	14612	8094 (37.1)	2642 (12.1)
1988-89 to 1990-91	46368	14756 (31.8)	31612	17355 (37.4)	6138 (13.2)

Notes: 1) Borrowing includes trade dues.
2) Figures in brackets indicate percentage of the total of all sources.

Sources: a) Reserve Bank of India: *Reserve Bank of India Bulletin,* Bombay, Different issues.
b) Reserve Bank of India: *Report on Currency & Finance,* Bombay, Different issues.

From the data presented in Table 5 an idea can be had about the importance of internal and external sources of finance as well as that of borrowing from the commercial banks in the overall financing of the growth of the public limited companies in India since independence. The facts submitted above do not provide a complete picture about the sources of finance of the corporate sector but are no doubt representative. Facts depicted in the table clearly indicate that the internal source continued to supply the major portion of the fund required by the corporate sector for its growth and development till 1964. Thereafter, the importance of the internal source of fund till the early 1960s are attributable to the non-existence of a vibrant capital market, absence of a developed network of financial institutions capable of catering to the need of the corporate sector itself. Under these circumstances, internal financing had to be resorted to on a wider scale, which the corporate sector was also capable of bearing in the context of their limited requirements.

Conversely, the importance of the external sources increased during the period, from a meagre 30 per cent in 1951-55 to 68 per cent in 1988-89 to 1990-91. Borrowing constituted an important component of the external sources, with banks being the suppliers of a considerable part of the funds borrowed by the corporate sector. During the period, borrowing from banks increased from 5.2 per cent of the total investment from all sources in 1951-55 to 23.6 per cent in 1964-66 and then came down to 13 per cent in the early 1970s where it settled down since then with insignificant year to year variations. It is thus clear that the borrowings from banks, as percentage of total investments from all sources, after reaching the peak in 1964-66 settled down around 13 per cent during the 1970s and 1980s. During the entire period, however, average net annual borrowing from banks by the corporate sector increased steadily, from a little above Rs. 5 crore in 1951-55 to about Rs. 900 crore in 1985-86 to 1987-88 and to more than Rs. 2045 crore in 1988-89 to 1990-91. Reasons behind the relative decline of the share of borrowing from banks since the late 1960s are nationalisation of the major commercial banks in 1969 and diversion of funds to the priority sector, growing reliance of the private corporate sector on other financial institutions such as the development banks and the increasing popularity of debentures as an important source of borrowing to the corporate sector.

Having examined the pattern of flow of fund to the private corporate sector from different sources including the commercial banks, we now venture to have a probe into the sectoral distribution of bank advances. Economic activities of the country are conveniently classified as the products of certain sectors and the advances given to those sectors by the commercial banks from time to time indicate the extent of patronage the banking system extended to those sectors. In India, simultaneously with increase in the control of the State over the banking system ever since the independence of the country, there has also taken place changes in the direction of flow of fund from the banking sector to different activities.

Table 6 indicates purpose-wise distribution of bank advances from the First Five Year Plan to the Seventh Five Year Plan. The table has been divided into two parts, Part-A and Part-B. Part-A includes the period up to the nationalisation of major commercial banks in 1969, and Part-B includes the period after nationalisation. This will enable us to find out the changes, if any, taking place in the direction of flow of advances of commercial banks after nationalisation. The tables are prepared on the basis of the data on the functioning of commercial banks made available by the Reserve Bank of India. As such, a complete picture about the direction of flow of advances of commercial banks and the changes taking place therein from time to time can be had from these tables.

It transpires from Table 6A that from the beginning of the planning for economic development, there started taking place significant changes in the purpose wise distribution of advances of commercial banks. The share of 'Industry' increased from 35.2 per cent during the First Plan to 59.7 per cent in the Third Plan. The trend continued during the Annual Plans of 1967 and 1968. The Second Five Year Plan, it is known to us, laid the foundation of the heavy industries and the commercial banks, by and large, provided necessary support to the endeavour of the State. There was little change in scheduled bank finance until 1955, and that thereafter the large increases in total bank credit were primarily associated with the increase of finance to industry. Commercial banks, during the period, provided financial support for industrial development in all conceivable means in the absence of a developed capital market and a developed network of term-lending institutions. The growth in the industrial credit during the late 1960s and early 1970s had taken place at a higher rate in relation to the growth of industrial production and the rising prices. "During the five-year period from 1968-69 to 1973-74, the value of the net domestic product originating in industry as a whole at 1960-61 prices increased by about 14.5 per cent; at current prices, it increased by 72 per cent. Broadly, during the same period, commercial bank credit to industry increased by 135 per cent and total institutional credit by 118 per cent" (*Shetty, 1978*). It is also interesting to note that the share of commerce in the advances of commercial banks steadily declined during the period from as high as 49.3 per cent during the First Plan to only 19.3 per cent during 1967-68. Till the beginning of planning, commerce alone used to attract more than half of the total advances of commercial banks; in 1949 it was 50.8 per cent and in 1950 it was 51.8 per cent of the total advances of commercial banks.

Table-6A : Analysis of the Sectoral Deployment of Advances of Scheduled Commercial Banks

(Rs. Crore)

Sectors	1951-1956	1957-1961	1961-1966	1967-1968
Agriculture	75.6 (2.1)	83.6 (1.7)	26.9 (0.3)	19.0 (0.3)
Industry	1262.3 (35.2)	2432.0 (48.9)	5510.5 (59.7)	3815.4 (66.0)
Commerce	1765.9 (49.3)	1807.7 (36.3)	2449.0 (26.5)	1114.2 (19.3)
Personal & Professional	296.0 (8.3)	408.8 (8.2)	567.9 (6.2)	227.9 (3.9)
Financial	–	63.0 (1.3)	422.1 (4.6)	180.9 (3.1)
Plantations	–	–	–	104.7 (1.8)
All others	181.9 (5.1)	180.5 (3.6)	246.8 (2.7)	319.5 (5.5)
Total :	3581.8 (100.0)	4975.5 (100.0)	9223.2 (100.0)	5781.6 (100.0)

Notes: 1) Figures in brackets indicate percentage to total.

2) In 1967, 1968 and 1969, there were three Annual Plans. Figures for 1969 were not available.

Sources: a) Reserve Bank of India: *Trend and Progress of Banking in India,* Bombay, Different issues.

b) Reserve Bank of India: *Reserve Bank of India Bulletin,* Bombay, Different issues.

c) Reserve Bank of India: *Statistical Tables Relating to Banks in India,* 1968.

Nationalisation of commercial banks in 1969 and adoption of separate targets for financing the growth of small-scale industries and the priority sector brought about further changes in the direction of flow of advances of commercial banks. Table 6B covers the period since the nationalisation of commercial banks.

From Table 6B it emerges that the share of industry in the advances of commercial banks which reached an all time high of 66 per cent in 1967-68, steadily declined since nationalisation of commercial banks and in 1991-92 (as on March 20, 1992) it was 37.4 per cent of the total bank advances outstanding. Since the nationalisation of commercial banks, the share of priority sector increased and the priority sector included small-scale industries as well. Small-scale industries could attract special patronage of commercial banks only since the early 1970s and were shown separately as receivers of advances of commercial banks during mid-1970s. Hence, the share of 'medium and large-scale industries' since the early 1970s is generally comparable with the share of 'Industries' of the years preceding the nationalisation of commercial banks. The decline in the share of trade in the advances of commercial banks continued during and throughout the 1970s and 1980s. In 1991-92, the share of trade in the total advances of commercial banks outstanding stood at only 4.9 per cent.

Table-6B : Analysis of the Sectoral Deployment of Advances of Scheduled Commercial Banks

(Rs. Crore)

Sectors	Outstanding as on the last Friday of				
	June 1975	March 1980	March 1985	March 1990	March 1992
1. Agriculture & Allied Activities/ Public Food Procurement Credit	968.7 (10.8)	2100 (9.9)	5665 (11.8)	2006 (2.0)	4670 (3.7)
2. Industry	5634.1	–	–	–	–
(a) Large & Medium	4516.6 (50.1)	8269 (38.9)	15939 (33.2)	38272 (37.3)	47090 (37.4)
(b) Small Scale Industries/ Priority Sector	1117.5 (12.4)	6730 (31.7)	18409 (38.4)	40387 (39.3)	45425 (36.0)
3. Trade	1499.8 (16.6)	1915 (9.0)	2649 (5.5)	5472 (5.3)	6154 (4.9)
4. Personal Loans	319.6 (3.6)	–	–	–	–

Table-6B : Analysis of the Sectoral Deployment of Advances of Scheduled Commercial Banks (*Contd.*)

(Rs. Crore)

Sectors	Outstanding as on the last Friday of				
	June 1975	March 1980	March 1985	March 1990	March 1992
5. Others	588.8 (6.5)	2221 (10.5)	5294 (11.0)	16534 (16.1)	22666 (18.0)
Total:	9011.0 (100.0)	21235 (100.0)	47956 (100.0)	102671 (100.0)	126005 (100.0)

Notes: 1) Figures in brackets indicate percentage to total.

2) Since 1980, by 'Industry', only medium and large-scale industries were meant and priority sector included small-scale industries. Hence, nothing was shown against 'Industry' in the above table from 1980 to 1992.

3) Since 1980, Agriculture came to be included within the priority sector and separate credit was granted for public food procurement.

Sources: a) Reserve Bank of India: *Banking Statistics,* Bombay, December 1976.

b) Reserve Bank of India: *Report on Trend and Progress of Banking in India,* Bombay, 1980-81.

c) Reserve Bank of India: *Report on Currency and Finance,* Bombay, Vol. I, 1985-86, 1989-90.

d) Reserve Bank of India: *Reserve Bank of India Bulletin,* Bombay, September 1993 (Supplement).

It can now be said that the scheduled commercial banks, true to the aspirations of the people of India, extended steadily increasing financial support to Indian industries during the 1950s and 1960s. The volume of support, measured in terms of the percentage of total advances of commercial banks to industry, was, however, far in excess of the contribution of this sector to the national output and employment. The logic behind such state of affairs may be drawn from the facts that such assistance was necessary for laying the foundation of organised industries in the independent India and that the absence of alternative sources, such as, an organised capital market and / or a network of development banks bestowed upon the banking system, the responsibility of helping the corporate sector in the early years of its growth. Subsequently, since the nationalisation of commercial banks and the fixation of definite targets for the priority sector, the share of industries in the total advances of commercial banks fell considerably and at present, the share of industries comes only next to the share of the priority sector. The decline in the share of trade/commerce in the total advances of banks from 49.3 per cent in 1951-56 to 4.9 per cent of the advances outstanding in 1991-92 also indicates that over this period the Indian commercial banks moved far away from what their founders wanted them to be, that is, the prototypes of the British counterpart.

Scheduled commercial banks also make long-term investment of funds in joint stock companies by subscribing to their shares and debentures. Such investments, which are partly the outcome of the underwriting agreements entered into by the banks with the companies issuing shares and debentures, however, constituted a very minor portion of the total investments of commercial banks from time to time.

Table 7 indicates that the commercial banks had always invested in shares and debentures of joint stock companies. Such investments also included investments in shares and debentures of the development banks. It appears that though in absolute terms the volume of investment holdings of commercial banks in shares and debentures of joint stock companies increased from Rs. 13.28 crore as on 31December, 1949 to Rs. 2364.16 crore as on 31 December, 1991, as percentage of total investment there was absolutely no increase. In fact, from an all time high of 3.6 per cent of total investment in 1951, such investments declined to an all time low of 0.6 per cent in 1986 and then again rose to 2.9 per cent in 1991. Relative decline in the investments of commercial banks in the shares and debentures of joint stock companies since the early 1970s is attributable to the fact that such investments of nationalised banks received lesser importance during the period. During the period, however, investments of commercial banks in the shares and debentures of development banks and term-lending institutions formed a considerable portion of the outstanding investment of commercial banks in shares and debentures shown in the table. It is also worth noting that nearly one-half of the total outstanding investments in shares at end-March 1976 was in the shares of Industrial Credit and Investment Corporation of India (ICICI), Agricultural Finance Corporation and Industrial Reconstruction Corporation (IRCI), and ICICI and IRCI accounted for one-third of the banks' investments in debentures (Source: RBI Bulletin, 1977).

The insignificant investment holding of commercial banks in corporate securities can be explained by the following factors: (a) the commercial banks wanted to confine their lending and investment activities as far as possible, to the supply of short-term working capital, (b) greater emphasis was put on the supply of funds to the priority sector since nationalisation of the major commercial banks in 1969, (c) emergence of development banks and other institutional investors as the principal suppliers of long-term funds, and (d) under Statutory Liquidity Ratio (SLR) requirements, commercial banks were required to make some investments in government bonds and securities which also meant that the banks were not left with sufficient funds for investment in the securities of the private corporate sector.

Table-7 : Investment of Scheduled Commercial Banks in the Shares and Debentures of Joint Stock Companies

(Rs. Crore)

As on 31st December	Total Investment of Scheduled Commercial Banks	Investments in Shares & Debentures of Companies	Col. (3) as percentage of Col. (2)
1	2	3	4
1949	402.54	13.28	3.3
1950	416.22	14.37	3.5
1951	358.12	12.71	3.6
1955	453.53	11.86	2.6
1956	442.39	11.23	2.6
1960	N.A.	N.A.	N.A.
1961	674.34	18.10	2.7
1965	935.16	25.04	2.7
1966	995.92	25.61	2.6
1970	1586.58	43.74	2.8
1971	1870.51	39.65	2.1
1975	4040.85	79.71	2.0
1976	5136.34	92.67	1.8
1980	10884.02	113.53	1.0
1981	13359.05	113.92	0.9
1985	25703.11	174.81	0.7
1986	32217.60	185.46	0.6
1987	N.A.	N.A.	N.A.
1988	49642.99	1115.99	2.2
1989	59394.65	1333.58	2.2
1990	69321.51	1696.95	2.4
1991	80355.41	2364.16	2.9

Notes: a) Figures include shares and debentures quoted on a recognised stock exchange as well as those not quoted on any recognised stock exchange.

b) Shares and debentures are shown at market value, and where it is not available, at book value.

c) N.A. means 'Not available'.

Sources: a) Reserve Bank of India: *Report on Trend and Progress of Banking in India,* Bombay, Different issues.

b) Reserve Bank of India: *Reserve Bank of India Bulletin,* Bombay, Different issues.

In addition to the above, the commercial banks also help the corporate sector in getting the long-term fund by underwriting the issues of shares and debentures made by them. In fact, by standing behind the public issues as underwriters, the commercial banks provide the most meaningful support for marketing the new issues. In India, the organisation of the new issue market is in fact, synonymous with the structure of underwriting of issues of capital (*Khan, 1978*).

Way back in 1931, when the regular arrangement for providing institutional support to capital issues was nowhere in sight, the Indian Central Banking Enquiry Committee recommended the participation of Indian commercial banks in the underwriting of corporate securities.The Committee's suggestion did not materialize, presumably because the necessary lead was not forthcoming. The Shroff Committee also recommended in 1953 that the banks and insurance companies should form syndicate for underwriting. Although the Shroff Committee's suggestion for the formation of an underwriting consortium was finally dropped, a few commercial banks, using their individual discretion, started participating in underwriting activity. Subsequently, the underwriting activity was stimulated by the participation of the Industrial Credit and Investment Corporation of India, other development banks, the Life Insurance Corporation of India and other non-banking financial intermediaries.

Table 8 depicts the trend of progress of underwriting in India since the mid-1950s and the extent of participation of banks and other financial institutions in the underwriting of issues of corporate securities.

Table-8 : Underwriting of the New Issues of Securities

(Rs. Crore)

Year	Total Amount of New Issue Offered to Public	Amount Underwritten	Amount Underwritten by			
			Banks	Financial Institutions	Brokers	Others
	1	2	3	4	5	6
1956-60	37.36	35.20 (94.21)	8.71 (24.74)	8.55 (24.28)	10.29 (29.23)	7.67 (21.78)
1961-65	139.69	124.13 (88.86)	12.75 (10.27)	68.41 (55.11)	26.42 (21.28)	16.58 (13.35)

Table-8 : Underwriting of the New Issues of Securities *(Contd.)*

(Rs. Crore)

Year	Total Amount of New Issue Offered to Public	Amount Underwritten	Amount Underwritten by			
			Banks	Financial Institutions	Brokers	Others
1966-70	205.33	186.33 (90.74)	15.54 (8.34)	123.80 (66.44)	28.54 (15.31)	20.79 (11.15)
1971-75	214.96	199.32 (92.72)	12.87 (6.45)	102.18 (51.26)	67.60 (33.91)	16.67 (8.21)
1976-80	266.06	200.05 (75.18)	29.62 (14.80)	111.81 (55.89)	36.29 (18.14)	22.33 (11.16)
1980-81	74.10	42.12 (56.84)	4.90 (11.63)	24.36 (57.83)	12.82 (30.44)	–
1981-82	301.98	261.38 (86.56)	35.25 (13.49)	111.44 (42.63)	118.73 (45.42)	–
1982-83	198.89	162.70 (81.80)	30.63 (18.83)	61.83 (38.00)	67.09 (41.24)	–
1983-84	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
1984-85	193.69	144.20 (74.44)	12.78 (9.55)	62.35 (43.23)	68.07 (47.20)	–
1985-86	429.80	274.13 (63.78)	31.30 (11.41)	104.19 (38.00)	137.88 (50.29)	0.76 (0.27)
1986-87	689.89	418.40 (60.64)	74.27 (17.75)	93.58 (22.36)	250.00 (59.75)	0.55 (0.13)
1988-89	1083.70	432.25 (39.89)				
1989-90	1698.89	536.06 (31.55)				
1990-91	827.30	772.49 (93.37)				
1991-92	847.17	836.69 (98.76)				

Notes: a) Figures in brackets in column (2) indicate percentage to column (1) and those in column (3) to (6) indicate percentage to column (2).
b) Financial Institutions include development banks, LIC, GIC & UTI.
c) N.A. means 'Not available'.

Sources: a) Reserve Bank of India: *Reserve Bank of India Bulletin,* Bombay, Different issues.
b) *Company News and Notes,* Different issues.
c) Reserve Bank of India: *Report on Currency & Finance* 1992-93, Vol.II, Bombay.

From the table it emerges clearly that since 1956-60 a significant portion of the total amount of new issues of shares and debentures offered to public for subscription was underwritten. The principal underwriters were the banks, the other public financial institutions such as the development banks, the LIC, the GIC and the UTI. It is also pertinent to note that from 1976-80 the percentage of new issues of securities underwritten steadily declined. This is mainly because of the fact that since the late 1970s, when the investors' participation in the new issue market increased with the initial thrust given by the new issues made by the FERA companies for the purpose of dilution of foreign control, the participation of underwriters declined. The trend continued till the late 1980s as, during this period, the new issues of securities made by the well established existing companies were readily accepted by the investors, minimising further the importance of the institutional underwriters. Since 1990-91 again, the percentage of new issues of securities offered for public subscription underwritten increased significantly and reached the all-time high of the pre-liberalisation period in 1991-92. The phenomenon is attributable to the requirements prescribed by the SEBI for underwriting of new issues offered to public for subscription.

The share of commercial banks in the underwriting of new issues offered to the public for subscription, which was 24.74 per cent in 1956-60, declined to 6.45 per cent in 1971-75 and then again increased to 17.75 per cent in 1986-87. It can be seen from the table that there is an inverse relationship between the share of the banks and the share of the financial institutions in the underwriting of new issues offered to the financial institutions in the underwriting of new issues offered to the public for subscription. Every increase in the share of the financial institutions was matched by a corresponding decline in the share of the banks and vice-versa. The share of commercial banks in the underwriting of new issues was not very significant mainly because of the fact that they never wanted to commit much of their resources in acquiring the securities in the event of the public not taking up any portion of the securities underwritten by them. Moreover, the commercial banks, unlike other public financial institutions, had other areas of operation exclusively reserved for them. Thus, the banks were more selective in entering into underwriting agreements than the other public financial institutions which entered into such agreements in a general way in view of the fact that the principal purpose of such financial institutions was to supply or to facilitate the supply of long-term fund to the corporate sector. But, in the early phase of the development of underwriting in India, the commercial banks played a very important role; the role of the initiators. A study of 380 public offerings of shares and debentures during the nine years 1955-63 showed that 219 of them were underwritten and that banks participated as underwriters in 88 (or 40 per cent) of the underwritten issues (*Gupta, 1969*).

In addition to the supply of finance, industries, both old and new, need various other services such as financial and managerial consultancy, project counselling, issue management, loan syndication, portfolio management, advice on and formation of schemes of amalgamation, etc. These services, broadly known as merchant banking, enable the industries to cope with the changing business environment in an effective manner. With the development of London as the centre for international trade and finance after the Industrial Revolution of England, the young, resourceful and enterprising traders of neighbouring European countries settled down in London and started rendering the services of merchant banking. Thus England became the nursing mother for the development of merchant banking. "The Dutch and the Scottish traders made a beginning of merchant banking but it was really developed and professionalised in Britain" (*Verma, 1990*).

In India, the merchant banking was first initiated by the managing agency houses in the early nineteenth century for financing trade and commerce. The foreign merchant bankers operated in India through an agency house which was very well known as 'East India House' representing a group that produced several merchant bankers during the 19th century. After the abolition of the managing agency system, the responsibility of continuing merchant banking in the modern lines was gradually shouldered by the commercial banks, both foreign and Indian. "Merchant banking services were initially started in India by foreign banks, namely, the National Grindlays Bank in 1967 and the First National City Bank in 1970. The first Indian Commercial Bank to provide these services was the State Bank of India, which set up Merchant Banking Division in 1972, one of the main considerations of which was to help small industrial units in their transition to medium scale and then to large scale" (*Pawar, 1988*). Other commercial banks, such as Canara Bank, Bank of Baroda, Bank of India, Punjab National Bank and the UCO Bank started merchant banking services in the late 1970s and early 1980s. Following the liberalisation of industrial licensing and other policies, the commercial banks also took steps in the direction of extending the merchant banking activities. In order to provide the services more effectively, some banks, like the State Bank of India and the Canara Bank, opened separate merchant banking subsidiaries.

In the early years of the development of merchant banking in India, most of the commercial banks used to confine their activities to issue management, underwriting and investment counselling. But subsequently, with the participation of ICICI, IDBI and other development banks, the merchant banking services of the commercial banks got diversified in new lines. Merchant banking services of the commercial banks near the end of the pre-liberalisation era included loan syndication, monitoring of industrial sickness and even investment banking. Afterwards, in the first years of the liberalisation period, the Reserve Bank of India cleared the entry of banks into leasing, factoring and hire purchase.

5. Conclusion

Modern commercial banking in India, developed under the initiative of the British businessmen, followed in all possible details the British system of banking. But, in the absence of merchant capital for investment in industries or a developed capital market capable of mobilising the savings of the society for investment in industries, the banking system proved unsuitable for the needs of Indian economy, particularly for the supply of finance for industrial development. Some early attempts for supply of industrial finance through the commercial banks, promoted by the Indians, miserably failed because of the lack of proper experience in industrial banking. Attainment of Independence in 1947 paved the way for making the commercial banks responsive to the needs of Indian economy. Near the end of the pre-liberalisation era, the State-owned commercial banks with wide network of branches were able to mobilise savings even from the rural areas. The operations of commercial banks also underwent significant changes. Type wise, term loans alone constituted about a third of the total investment and sector-wise, industries, consisting of large, medium and small, received about seventy per cent of the total investment of commercial banks. Banks then not only provided credit but also subscribed to shares and debentures of companies and underwrote the issues of corporate securities to a considerable extent. For serving the needs of the corporate sector more effectively, Indian commercial banks, near the end of the pre-liberalisation era, extended their area of operation to include merchant banking. With a carefully laid out elaborate institutional arrangement for supply of industrial finance in India at that time, specialised services, like that of merchant banking, heralded an ever-expanding horizon of operation for the commercial banks for the years to come.

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Rating of State Co-operative Banks in India: A DEA Approach

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Abstract: Cooperative Bank plays an important role in meeting the growing credit needs of rural India. In the context of planned economic development, the state co-operative banks have become an important instrument in the hands of the State for rural development. The present study attempts to evaluate the performance of 31 State Co-operative Banks operating in India for the year 2011-12 by applying Data Envelopment Analysis (DEA) approach and finds out the relationship between the efficiency score of the banks and other independent variables by multiple regression analysis. The study observed that out of 31 State Co-operative Banks, 21 banks are efficient for the year 2011-12. The empirical findings suggest that in order to improve the efficiency of the State Co-operative Banks in India the inefficient banks have to reduce the amount of capital and number of employees. The findings suggest that technical efficiency of cooperative bank, which has been reflected by 'efficiency score', is positively associated with equity to total asset, bank size, ROA, non-interest income, and negatively related to market power, loans intensity, loan loss provisions to total liabilities, non-interested expenses to total asset.

Key-words: State co-operative bank, DEA, efficiency score, multiple regression, global leader.

1. Introduction

Economic development of a country or a state depends on the efficiency of its financial system. Cooperative banks have come to constitute an important segment of the financial system and occupy a unique position as they are organized on co-operative principles. A co-operative bank promotes economic activity and provides banking facilities and services to the weaker section of the society. The State co-operative bank is the leader of the co-operatives in a state and acts as a supervisory body at the top and arranges to spread the co-operative movement. The main objective of a State Co-operative Bank is to mobilize financial resources and make it available for provision of short and medium-term loans to agriculturists and small entrepreneurs through the mechanism of Central Co-operative banks at the district level and PACS at the village level in order to provide the banking facilities in the rural and remote area.

The rural and agricultural sector remained somewhat neglected and also the impact of reforms on the economic fortunes of the common people are overlooked. But our social goal demands for development of the weak and poor. Due to liberalization, Government controls have been substantially reduced on domestic manufacturing, and trade and there have been significant reductions in regulations relating to foreign trade and investment. To encourage privatization, policies of the Government have been changed such as deregulation of state enterprises, reduction in tariff barriers, creation of proper environment for the development of private investment in infrastructure and manufacturing etc.

In this context, it would be worthwhile to analyse the possible impact of the New Economic Policy (NEP) on the co-operatives and to determine the roadmap for their survival. Till date, the New Economic Policy (NEP) has caused a lot of concern and apprehension among the co-operatives. As the economy is decontrolled and opened up, the number of operators in every field is increased. Cut-throat competition is observed in every sphere of the financial sector. The co-operatives are afraid that they would not be able to face this competition. The share of the co-operatives in agriculture, which used to be around 62% even in the year 1992-93, had slipped down to 16% in the year 2010-11 due to stiff competition with the commercial banks of public sector and private sector. In the light of the above discussion, the present study attempts to evaluate the performance of State co-operative Banks operating in India for the year 2011-12.

The remainder of the present study has been divided into five sections. Section 2 covers brief review of literature. Objectives of the study are covered in section 3. In section 4, methodology and data are discussed. Section 5 covers empirical results and in section 6 conclusion and suggestions are made.

2. Review of Literature

In the past, some studies relating to financial performance of commercial banks and co-operative banks in India and abroad have been conducted. A brief review of these efforts at research in this field has been presented in the following paragraphs.

Saha and Ravishankar (2000) has studied the performance of Indian banks using DEA approach. They suggested that DEA is a useful technique in determining relative efficiency. They also concluded that efficiency of public sector banks had improved during the study period.

Sathye (2003) has measured the productive efficiency of 94 Indian commercial banks for the year 1996-97.The efficiency has been calculated using Variable Return to Scale (VRS) input oriented model of the DEA methodology. The study shows that as per model A, the public sector banks have a higher mean efficiency score as compared to the private sector and foreign commercial banks in India. As per the model B, they have lower mean efficiency score than the foreign banks, but still higher than private sector commercial banks.

Nandy (2007) measured the comparative efficiency of public sector banks in India during 2005-06. The efficiency was calculated using variable return to scale (VRS), output oriented model of the DEA methodology. He concluded that out of 28 public sector banks operating in India during the year 2005-06 , only 17 banks are 100% efficient, and to improve the overall efficiency of the public sector banks in India , the refereed banks have to increase their NP/ TA by 41.4%, reduce number of branches by 17.14%.

Debnath and Shankar (2008) have tried to evaluate the efficiency of 50 Indian banks for the period 2004-05 by using DEA. They stated that among medium size banks, no nationalized banks were efficient, however small and large nationalized banks are more efficient and are doing better than medium sized nationalized banks.

Khankhoje and Sathye (2008) investigated whether restructuring of regional rural banks' in India–undertaken in 1993-94 has helped improve their production efficiency. The study finds that efficiency of rural banks has significantly improved after restructuring.

Cheng-Ruwu, Hui-Yin Tsai and Ya-Meiwang (2008) conducted a comparative analysis of efficiency of banks manageable in Hong Kong using two stage model, which evaluates their operational efficiency (OE), and profitability efficiency (PE). The study recommends that large banks are generally more efficient than small sized ones in the operational efficiency. They concluded that large banks' have better competitive power than those of smaller ones.

Kumar and Gulati (2010) analysed the trends of cost efficiency and its component across Indian Public Sector Banks (PSBs) during the post-deregulation period spanning from 1992-93 to 2007-08. Their investigation suggests that deregulation has had a positive impact on the performance of Indian public sector banking industry in terms of cost efficiency over the study period.

Mohindra and Kaur (2011) attempted to empirically examine the relative efficiency of regional rural banks in India during the post reform period from 1991-92 to 2006-07 by using non-parametric technique of Data Envelopment Analysis (DEA). The empirical findings provided the evidence of positive relationship among scale economies and bank size.

Sekhri and Varshney (2011) attempted to measure the technical efficiency (TE), based on cross section data of 69 banks in India during the period 2007-08 and 2008-09. They concluded, with the help of efficiency profitability matrix, out of 69 banks covered under the study five public sector banks, two private sector banks and two foreign banks are able to maintain their star status for both years. These nine banks appear as ideal banks and a benchmark for other banks.

Thagunna and Poudel (2013) sought to measure and analyze the efficiency levels of banks in Nepal during 2007-08 to 2010-11. The study reveals that efficiency level is relatively stable and has increased on overall. The study also found that both the ownership type and the asset size of a bank don't affect its efficiency.

Jayaraman and Srinivasan (2014) attempted to measure the efficiency index for the banks in India using DEA models (cost, revenue and profit DEA models) and Shannon entropy method. The study suggested that Shannon-DEA approach provides a comprehensive efficiency index for banks as well as a reasonable way of ranking the banks.

Sravani (2014) tried to estimate technical efficiency of public sector banks in India for the period 2009-2013. From the study it was observed that the overall average technical efficiency of selected public sector banks for the period 2009 to 2013 was found to be 91.64% under CRS assumption and 95.45% under VRS assumption.

From the above literature review, it is apparent that till date no organized and systematic study has been done on the performance of State Co-operative Banks in India. This paper attempts to provide an analytical study which would highlight the performance of 31 State Co-operative banks operating in India and also suggest measures for overcoming the weaknesses and deficiencies.

3. Objectives of the Study

The present study aims to evaluate the performance of the State Co-operative Banks operating in India. Specifically, the objectives are to:

i) measure the efficiency score of each State Co-operative Banks operating in India for the year 2011-12;

ii) analyse the efficiency report (input and output) of each State Co-operative Bank in India for the year 2011-12;

iii) identify the potential improvement of the inefficient State Co-operative Banks during the year 2011-12 and

iv) find out the relationship between the efficiency score and other independent variables of the banks.

4. Methodology and Data

The methodology is presented under the following major heads:

a) Institutions covered under this study–

The present study covers the performances of 31State Co-operative Banks operating in India.

b) Period of study– The present study covers the period 2011-12.

c) Nature and sources of data–

Secondary data have been used in the present study. The secondary data are collected from the various issues of report on basic data on performance of State co-operative banks in India published by National Federation of State Co-operative Bank Ltd. (NAFSCOB), annual reports published by National Bank for Agricultural and Rural Development (NABARD) and various issues of Report on Trends and Progress on Banks in India published by Reserve Bank of India (RBI).

a) Analytical techniques applied–

1) Data Envelopment Analysis (DEA):

Data Envelopment Analysis (DEA) is a linear programming technique for the measurement of relative efficiency score of the various Decision Making Units (DMUs) in a particular sample. With the help of DEA, each DMU is assigned a single efficiency score, hence allowing ranking amongst the DMUs in the sample. The best performing DMU is assigned an efficiency score of unity (1) and the efficiency score of other decision making units ranges between 0 and 1. For the in- efficient DMUs, DEA measures the slacks in each of the input and output variable and also derive a reference group of efficient units with which they can directly compare. This set of efficient DMUs is called reference set. The owners of the DMUs may be interested to know which DMU frequently appears in this set. A DMU that appears more than others in this set is called the global leader. The value of lambda determines the most influencing referent bank. The higher the value of lambda means that stronger the referent bank.

In the present study, the efficiency has been calculated using variable returns to scale (VRS) input oriented model. The input oriented BCC model for the DMUJ can be written as:

Min $Z_0 = \theta_0$

$$\text{Subject to} \quad \sum_{j=1}^{n} \lambda_j y_{rj} \geq y_{r0} \qquad r = 1,2,3,\ldots,s$$

$$\theta_0 x_{i0} \geq \sum_{j=1}^{n} \lambda_j x_{ij} \qquad i = 1,2,3,\ldots,n$$

$$\sum_{j=1}^{n} \lambda_j = 1$$

$$\lambda_j \geq 0 \qquad j = 1,2,3,\ldots,n$$

y_{rj} and x_{rj} respectively denote the rth output and ith input for the jth bank. Where the technical efficiency of DMU_J is denoted by θ_0 and λ_j indicates weight of the jth DMU. The BCC efficiency scores are obtained by running the above model for each DMU. These scores are called "Pure technical score", since they are obtained from the model which considers the variable return to scale. Once "Pure technical efficiency", estimates are available, scale efficiency (SE) is computed from the formula, SE = Technical efficiency (CRS)/Pure technical efficiency (VRS). The DMU with technical efficiency $\theta_j < 1$ is considered as inefficient, the efficiency $\theta_j = 1$ shows the efficient DMU placed on the efficiency frontier. Four inputs and three output variables namely, capital, deposits, borrowings, number of employees (inputs) and loans and advances, investments and per employee business (outputs) have been used in this study.

2) Multiple Regression Analysis:

Linear multiple regression analysis is a sophisticated statistical technique to search the influence of one variable to another variable. In other words, it is a refined statistical technique to explore the relationship between three or more variables. In the present study, it is applied to enlighten the effect of explanatory variables—Equity to total asset (Equita), Loan loss provisions to total loans (Llptl), Log of total deposits (Lndepo), Log of total asset (Lnta), Loans to total asset (Loansta), Non-interest expenses to total asset (Nieta), Non-interest income to total asset (Niita) and Return on asset (Roa) on the dependent variable efficiency score (ES) derived from the Data Envelopment Analysis (DEA) using variable return to scale input oriented model. For analytical analysis, the regression model is specified as:

$$E_S = \beta 0 + \beta 1\ (\text{Equita}) + \beta 2\ (\text{Llptl}) + \beta 3\ (\text{Lndepo}) + \beta 4\ (\text{Lnta}) + \beta 5\ (\text{Loansta}) + \beta 6\ (\text{Nieta}) + \beta 7\ (\text{Niita}) + \beta 8\ (\text{Roa}) + e_{it}$$

E_s = Efficiency score, $\beta 0$ is constant and βi are the regression coefficients of the explanatory variables, while eit is the residual error of regression.

5. Empirical Results

Table-1 presents the efficiency summary of 31 State Co-operative banks operating in India for the year 2011-12. As per the table, 26 State Co-operative Banks (StCBs) are efficient, each of which has efficiency scores of 1 (100% efficiency), whereas the rest of the banks are inefficient, whose scores are less than 1. From the table it may be observed that Bihar State Co-operative Bank is the most inefficient bank for the year 2011-12 which scores only 0.541. From the table 1, it may be observed that Sikkim State Co-operative Bank has maximum reference set frequency 4, that indicate this bank referred four times while measuring the efficiency of inefficient State Co-operative banks. Sikkim State Co-operative bank is considered as 'Global Leader' as the bank appears more than the other banks for the year 2011-12.When the reference set frequencies of DMUs are 0 that indicate the banks are not at all referred in measuring the efficiencies of inefficient banks. Returns to Scale (RTS) as identified by the input oriented BCC model is also presented in table 1. The bank has the scale efficiency when it operates in the range of constant returns to scale. From the table 1 it may be observed that the share of scale efficient banks i.e. operating at CRS in the year 2011-12 is 80.65%. The share of banks experiencing economies of scale i.e. operating at IRS during the said period are 6.45%. The share of banks witnessing diseconomies of scale i.e. operating at DRS is 12.90%.

Table-1: Efficiency Summary of State Co-operative Banks in India for the year 2011-12

Sl. No	Name of the SCB	Efficiency summary			Return to Scale	Rank	Reference set Frequencies
		Crste	Vrste	Se			
1	Andaman & Nicobar	1	1	1	CRS	1	0
2	Andhra Pradesh	0.955	1	0.955	DRS	1	0
3	Arunachal Pradesh	1	1	1	CRS	1	2
4	Assam	1	1	1	CRS	1	0
5	Bihar	0.54	0.541	0.988	DRS	6	0

Table-1 : Efficiency Summary of State Co-operative Banks in India for the year 2011-12 (*Contd.*)

Sl. No	Name of the SCB	Efficiency summary			Return to Scale	Rank	Reference set Frequencies
		Crste	Vrste	Se			
6	Chandigarh	1	1	1	CRS	1	1
7	Chhattishgarh	1	1	1	CRS	1	0
8	Delhi	1	1	1	CRS	1	1
9	Goa	1	1	1	CRS	1	0
10	Gujarat	1	1	1	CRS	1	2
11	Haryana	0.969	0.97	1	CRS	2	0
12	Himachal Pradesh	1	1	1	CRS	1	0
13	Jammu & Kashmir	1	1	1	CRS	1	0
14	Karnataka	0.967	0.968	0.999	IRS	3	0
15	Kerala	0.984	1	0.984	DRS	1	0
16	Madhya Pradesh	0.949	0.956	0.993	DRS	4	0
17	Maharashtra	1	1	1	CRS	1	1
18	Manipur	1	1	1	CRS	1	0
19	Meghalaya	1	1	1	CRS	1	0
20	Mizoram	1	1	1	CRS	1	0
21	Nagaland	0.822	0.859	0.957	IRS	5	0
22	Orissa	1	1	1	CRS	1	0
23	Pondicherry	1	1	1	CRS	1	0
24	Punjub	1	1	1	CRS	1	3
25	Rajasthan	1	1	1	CRS	1	1
26	Sikkim	1	1	1	CRS	1	4
27	Tamilnadu	1	1	1	CRS	1	1
28	Tripura	1	1	1	CRS	1	0
29	Uttar Pradesh	1	1	1	CRS	1	1
30	Uttarakhand	1	1	1	CRS	1	1
31	West Bengal	1	1	1	CRS	1	0

Note: Crste = technical efficiency from CRS DEA
Vrste = technical efficiency from VRS DEA
Se = scale efficiency = crste/vrste

Table-2 shows the efficiency report (input) of 31 State Co-operative Banks operating in India. It may be observed from the said table that the banks having 100% efficiency (TE-1) have no scope for any further improvement and in that case observed value and projected value are equal. But in the case of banks having scored less than 1, there is scope for further improvement. Potential improvement in the case of inefficient banks should be negative meaning that the said banks should reduce the inputs in order to reach 100% efficiency. As our study assumed to input oriented DEA, so all of the four inputs have a scope for further potential improvement in the case of inefficient banks. For instance, Bihar state co-operative bank (TE-0.54) has the scope to reduce the capital by Rs. 899 crores, deposits by Rs. 85570 crore, borrowings by Rs 38517 crores and number of employees by 79 to become 100% efficient.

Table-2 : Efficiency Report (input) of 31 STCBs during 2011-12

Sl No	Name of the STCBs	TE	Capital			Deposits			Borrowings			No. of Employees		
			OV	PV	PI	OV	PV	PI	OV	PV	PI	OV	PV	PI
1.	Andaman & Nicobar	1	294	294	0	45603	45603	0	4591	4591	0	234	234	0
2.	Andhra Pradesh	1	24659	24659	0	391190	391190	0	508629	508629	0	558	558	0
3.	Arunachal Pradesh	1	19236	19236	0	9508	9508	0	14934	14934	0	318	318	0
4.	Assam	1	884	884	0	155947	155947	0	700	700	0	670	670	0
5.	Bihar	0.54	1959	1060	-899	186608	101038	-85570	78221	39704	-38517	169	90	-79
6.	Chandigarh	1	61	61	0	25444	25444	0	0	0	0	76	76	0
7.	Chhattishgarh	1	7705	7705	0	148358	148358	0	70216	70216	0	122	122	0
8.	Delhi	1	708	708	0	77586	77586	0	2146	2146	0	566	566	0
9.	Goa	1	2062	2062	0	116027	116027	0	0	0	0	682	682	0
10.	Gujarat	1	2062	2062	0	486157	486157	0	242329	242329	0	197	197	0
11.	Haryana	0.97	10474	5762	-4712	213090	206605	-6485	340441	330080	-10361	469	395	-74
12.	Himachal Pradesh	1	843	843	0	524219	524219	0	74927	74927	0	1210	1210	0
13.	Jammu & Kashmir	1	152	152	0	49022	49022	0	78	78	0	178	178	0
14.	Karnataka	0.96	11331	6809	-4522	526349	509517	-16832	283431	274367	-9064	419	405	-14
15.	Kerala	1	38869	38869	0	590416	590416	0	138432	138432	0	282	282	0
16.	Madhya Pradesh	0.95	21203	14584	-6619	387879	370638	-17241	334682	319805	-14877	664	512	-152
17.	Maharashtra	1	44465	44465	0	1586239	1586239	0	396571	396571	0	1728	1728	0
18.	Manipur	1	1521	1521	0	9457	9457	0	12067	12067	0	84	84	0
19.	Meghalaya	1	469	469	0	115744	115744	0	4425	4425	0	595	595	0
20.	Mizoram	1	604	604	0	37223	37223	0	2969	2969	0	142	142	0
21.	Nagaland	0.85	3550	1248	-2302	36684	31500	-5184	1028	882	-146	229	156	-73
22.	Orissa	1	17067	17067	0	395428	395428	0	340316	340316	0	215	215	0
23.	Pondicherry	1	1458	1458	0	53262	53262	0	1917	1917	0	265	265	0
24.	Punjub	1	6768	6768	0	259339	259339	0	482272	482272	0	462	462	0
25.	Rajasthan	1	8421	8421	0	358002	358002	0	361059	361059	0	274	274	0
26.	Sikkim	1	1128	1128	0	13600	13600	0	391	391	0	48	48	0
27.	Tamilnadu	1	10670	10670	0	662009	662009	0	223340	223340	0	556	556	0
28.	Tripura	1	1719	1719	0	115555	115555	0	281	281	0	256	256	0
29.	Uttar Pradesh	1	14385	14385	0	463072	463072	0	180350	180350	0	1132	1132	0
30.	Uttarakhand	1	3391	3391	0	123123	123123	0	51128	51128	0	79	79	0
31.	West Bengal	1	3589	3589	0	503156	503156	0	119491	119491	0	409	409	0

Efficiency report (output) of 31 State Co-operative Banks for the year 2011-12 is presented in table 3. As our study adopted on input oriented DEA, there may not be any scope for further improvement for some of the outputs of the inefficient banks. In the case of output, potential improvement should be positive meaning that the inefficient banks should increase output to become efficient As it is evident from table 3 that Bihar State Co-operative Bank has ample scope for further improvement in loans and advances, and investments but not the per employee business (PEB).

Table-3 : Efficiency Report (output) of 31 STCBs during 2011-12

Sl No	Name of the STCBs	TE	Loans and Advances			Investments			PEB		
			OV	PV	PI	OV	PV	PI	OV	PV	PI
1	Andaman & Nicobar	1	22282	22282	0	31540	31540	0	290	290	0
2	Andhrapradesh	1	707808	707808	0	137653	137653	0	1969	1969	0
3	Arunachal Pradesh	1	10944	10944	0	27285	27285	0	64	64	0
4	Assam	1	50484	50484	0	101956	101956	0	308	308	0
5	Bihar	0.54	35905	60625	24720	37311	70978	33667	1316	1316	0
6	Chandigarh	1	6201	6201	0	6449	6449	0	416	416	0
7	Chhattishgarh	1	115553	115553	0	42815	42815	0	2163	2163	0
8	Delhi	1	38563	38563	0	62537	62537	0	205	205	0
9	Goa	1	62439	62439	0	34772	34772	0	261	261	0
10	Gujrat	1	362408	362408	0	363232	363232	0	4307	4307	0
11	Haryana	0.97	451534	451534	0	72254	110127	37873	1417	1455	38
12	Himachal Pradesh	1	222649	222649	0	393094	393094	0	617	617	0
13	Jammu& Kashmir	1	10060	10060	0	37979	37979	0	332	332	0
14	Karnataka	0.96	538150	538150	0	189817	246073	56256	2540	2885	345
15	Kerala	1	307671	307671	0	189566	189566	0	3184	3184	0
16	Madhya Pradesh	0.95	452907	452907	0	288117	288117	0	1266	1645	379
17	Maharashtra	1	1028528	1028528	0	1176550	1176550	0	1513	1513	0
18	Manipur	1	15248	15248	0	10322	10322	0	294	294	0
19	Meghalaya	1	42112	42112	0	47239	47239	0	265	265	0
20	Mizoram	1	21597	21597	0	10629	10629	0	414	414	0
21	Nagaland	0.85	13209	13209	0	23569	23569	0	218	391	173
22	Orissa	1	379279	379279	0	388944	388944	0	3603	3603	0
23	Pondicherry	1	38734	38734	0	17026	17026	0	347	347	0
24	Punjub	1	629567	629567	0	148764	148764	0	1924	1924	0
25	Rajasthan	1	403592	403592	0	349059	349059	0	2779	2779	0
26	Sikkim	1	9264	9264	0	7663	7663	0	476	476	0
27	Tamilnadu	1	658300	658300	0	213899	213899	0	2375	2375	0
28	Tripura	1	35637	35637	0	76065	76065	0	590	590	0
29	Uttar Pradesh	1	497948	497948	0	145574	145574	0	849	849	0
30	Uttarakhand	1	64314	64314	0	108008	108008	0	2373	2373	0
31	West Bengal	1	330300	330300	0	285618	285618	0	2037	2037	0

Potential improvement (%) and reference sets schedule of the inefficient State Co-operative Banks in India for the year 2011-12 are presented in table 4. For example, it may be observed from the table that Bihar State co-operative Bank having efficiency score of 54% may reduce its input utilization as capital by 45.89%, deposits by 45.85%, borrowings by 49.24%, number of employees by 46.74% and can improve its output level as loans and advances by 68.84% and investment by 90.23%. Potential improvement of input and output of 5 inefficient banks are presented in this table. The value of lamda determines the most influencing referent bank. The higher the value of lamda means that stronger the referent bank. For instance the peer groups for Bihar State Co-operative Banks are Chandigarh State Co-operative Bank with a lamda value 0.654, Gujarat State Co-operative Bank with lamda equal to 0..115, and finally Uttarakhand State Co-operative Bank with lamda value 0.231. This result implies that Bihar State Co-operative bank being an inefficient bank ranking 6 with efficiency score of only 54% becomes 100% efficient if Chandigarh State Co-operative Bank is chosen as a role model. Similarly the other reference set of the inefficient banks can be interpreted.

Table-4: Potential improvement (%) and Reference Sets Schedule of the Inefficient STSBs for the year 2011-12

Sl. No	In efficient STCBs	Efficiency Score (%)	INPUTS				OUTPUTS			Reference set (Lamda)
			Capital	Deposits	Borrowings	No. of employees	Loans & Adv.	Investment	PEB	
1	Bihar	0.54	-45.89	-45.85	-49.24	-46.74	68.84	90.23	0	Chandigarh (0.654) Gujrat (0.115) Uttarakhand (0.231)
2	Haryana	0.97	-44.09	-3.04	-3.04	-15.77	0	53.8	2.68	Sikkim (0.272) Punjub (0.658) Uttar Pradesh (0.070)
3	Karnataka	0.96	-39.9	-3.19	-3.19	-3.34	0	29.63	13.58	Gujrat (0.334) Tamilnadu (0.448) Punjub (0.194) Sikkim (0.024)
4	Madhya Pradesh	0.95	-31.21	-4.44	-4.44	-22.89	0	0	29.93	Rajasthan (0.281) Arunachal Pradesh (0.254) Maharashtra (0.111) Punjub (0.354)
5	Nagaland	0.85	-64.84	-14.13	-14.2	-31.87	0	0	79.35	Arunachal Pradesh (0.025) Sikkim (0.568) Delhi (0.126) Jammu& Kashmir (0.281)

efficient if Chandigarh State Co-operative Bank is chosen as a role model. Similarly the other reference set of the inefficient banks can be interpreted.

Multiple correlation and multiple regression analysis of State Co-operative Banks in India have been shown in table 5. The strengths of the relationship between the dependent variable-efficiency score (ES), and all the independent variables taken together considered in this study and the impact of the independent variables on the efficiency score (ES) are shown in table 5 after considering regression analysis under enter method.

Table-5 : Results of Determinants of Efficiency Score of State Co-operative Banks of India

	Coefficient	Std. Error	t-Statistic	Prob.	VIF
ES	-5.96	5.63	-1.05	0.4823	
Equita	13.59	13.04	1.04	0.4868	1.932
Llptl	-7.89	8.89	-0.88	0.5377	1.894
Lndepo	-2.47	5.44	-0.45	0.729	2.001
Lnta	3.99	5.63	0.70	0.6076	1.762
Loansta	-3.87	4.48	-0.86	0.5461	1.599
Nieta	-62.55	51.51	-1.21	0.4385	1.438
Niita	56.97	59.29	0.96	0.5127	1.847
Roa	72.67	63.57	1.14	0.4575	1.133
R=0.89 | R-squared = 0.80		Adjusted R-squared = 0.78			
S.E. of regression=0.057418		Prob (F-statistic) = 0.80			
Durbin-Watson stat= 1.4507					

VIF statistic is more than 1 and near about 2 indicates that there is no multicollinearity problem. At the same time, Durbin-Watson statistic (1.4507) indicate that errors terms are not auto correlated. It is observed from table 5 that an increase in equity to total asset (Equita) by one unit, the efficiency score (ES) of the banks increase by 13.59 unit. So Equita has a positive relationship with efficiency score. As per our expectation Llptl shows a negative relationship with the efficiency score. When Loan loss provisions to total loans (Llptl) increase by one unit, the efficiency score (ES) of the banks decrease by 7.89 units. The results imply that State co-operative banks in India should give proper attention in credit risk management. Lndepo which is the proxy of market power reveals a negative relationship with the efficiency score. When Log of total deposits (Lndepo) increase by one unit, the efficiency score of the banks decrease by 2.47 units. So, it is observed that if the bank expanding their market share which involves extra costs and input adversely affects the efficiency score of the banks. As a proxy of bank's size, Lnta has the positive relationship with efficiency score which indicates that efficient bank gets the benefit of economies of scale. We observed that when Log of total asset (Lnta) increase by one unit, the efficiency score of the banks increase by 3.99 unit. When Loans to total asset (Loansta) is increased by one unit, the efficiency score of the banks decreased by 3.87 units and it is also insignificant at 5% level of significance. The empirical findings suggest that the banks having higher loan to asset ratio produces the lower efficiency score. As expected it is also observed that quality of management as measured by Non-interest expenses to total asset (Nieta) has the negative relationship with the efficiency score. When Nieta has increased by one unit, the efficiency score of the banks is decreased by 62.55 unit. As a proxy of diversification of activities of banks into non-traditional activities, non-interest income to total asset (Niita) has the strong and positive relationship with the efficiency score of the banks. When Non-interest income to total asset (Niita) increase by one unit, the efficiency score of the banks increase by 56.97 units. The study observed that profitability of the banks which is commonly measured by the ROA has positive relationship to efficiency score of the banks. It is observed from the table that efficiency score of the banks have been increased by 72.67 units if Return on Asset (ROA) is increased by one unit. We may say that more profitable banks tend to have high efficiency score. The multiple correlation co-efficient between the dependent variable efficiency score (ES) and the independent variables taken together are (R) 0.89. It indicates that the efficiency score is highly responded by its independent variables. It is also evident from the value of R2 that 80% of the variation in efficiency score is accounted by the joint variation in independent variables. Adjusted R2 signifies that 78% of the variations in the efficiency score are explained by the independent variables. Standard error of regression co-efficient being low certifies that there exists really line of estimates among the variables. The value of F=0.80, which examines the significance of all the variables collectively in regression function. The observed R2 and F statistics may thus be sufficient to draw an inference in favour of thc goodness of the regression model to fit into the present bank of identifying the factors influencing the efficiency score of the banks during the study period.

Then the research (dependent) variable depends certain percentage on unexplained variables that may shock the research variables, which are, fund management and resource allocation by the bank, cost control management and policy adopted by bank management as internal omitted factors and prudential norms-asset classification, capital adequacy, income recognition and provisioning norms, agricultural credit contributed by NABARD, Government investment in the agricultural sector, regulations in interest rate, policy of the market economy in the post-LPG era and political, economic, social and technological factors as external omitted factors.

6. Conclusion and Suggestions

Using published data, this paper worked out the efficiency score of 31 State Co-operative Banks for the year 2011-12. The scores are calculated using Data Envelopment Analysis (DEA). DEA highlights the areas of improvement (input and output) for each inefficient unit. The study shows that out of 31 State Co-operative Banks operating in India during the year 2011-12, 21 banks are efficient. The result shows that the share of scale efficient banks i.e. operating at CRS in the year 2011-12 is 80.65%. The share of banks witnessing diseconomies of scale i.e. operating at DRS is 12.90%. It implies that there is excess in input and a shortage of output. The study recommends the optimum utilization of existing inputs for improving the efficiency of inefficient units. Bihar State Co-operative Bank is the most inefficient bank for the year 2011-12 with 54% efficiency score. Sikkim State Co-operative Bank has maximum reference set frequency, is considered as 'Global Leader' for the year 2011-12. The empirical findings suggest that in order to improve the efficiency of the state co-operative Banks in India the inefficient banks have to reduce the amount of capital and number of employees The findings suggest that technical efficiency is positively associated with equity to total asset, which indicate that efficiency scores are influenced by the capital base of the banks. The study also shows that efficiency score is positively associated with bank size, suggesting that larger banks tend to be more efficient. ROA is the profitability measure of banks and it is positively associated with efficiency score indicating that the more efficient banks are more profitable. Non-interest income to total asset is positively associated with the efficiency score indicating that the efficient banks tend to become more managerially efficient as they increase their income from non-interest sources. The findings also suggest that the efficiency of banks is negatively related to market power (Lndepo) which indicate that more efficient bank has the lower market share. Loans intensity (Loansta) reveals a negative relationship with efficiency score which implies that banks with higher loans to asset ratio have a chance of lower efficiency score of the banks. Loan loss provisions to total liabilities (Llptl) shows a negative relationship with efficiency score which indicate a bank having bad loans reduce the profitability and efficiency. Non-interested expenses to total asset (Nieta) have negative impact on efficiency score. It may be suggested that a high non-interest expenses to total asset ratio affected the performance of bank negatively and efficient banks are to operate at lower cost.

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Client Protection Mechanism in Indian Microfinance Institutions—A Study on Arohan

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Abstract: The over-indebtedness of microfinance borrowers, high interest rate and coercive method of collection by some Microfinance Institutions (MFIs) are the vital problems in the microfinance sector of India. The situation became more critical as there is no such regulation and single regulatory body for the sector. There is a dire necessity of proper regulation for ensuring the clients protection and responsible financing by the MFIs. Sa-Dhan, the Association of Community Development Finance Institutions, has developed few client protection principles for its members in India. Internationally, Consultative Group to Assist the Poor (CGAP) and Smart Campaign also came out with client protection principles. Some provisions are also included in the Andhra Pradesh Ordinance 2010, Malegam Committee Report to Reserve Bank of India (RBI) and Microfinance Institutions (Development and Regulation) Bill 2011 for ensuring client protection.

The primary objective of the study is to examine the present scenario of the client protection mechanism in Indian MFIs. I have selected six parameters of client protection and have matched it with the feedback from the clients of Arohan, the leading Indian MFI for evaluating its client protection mechanism.

Key-Words: Client protection principle, self regulation, Microfinance Institutions.

1. Introduction

Microfinance is playing an important role in poverty eradication, women empowerment and socio-economic development of the poor in India since the last two decades. In the last few years, Microfinance Institutions (MFIs) have made an outstanding growth in this sector in terms of client outreach and loan portfolio. At the same time, the issue of social responsibilities of the MFIs has put a question mark on the future of Rs. 22,000 crore market of this sector. The over-indebtedness of microfinance borrowers is a vital problem in some countries where microfinance has grown very rapidly. These markets, including Bosnia- Herzegovina, Morocco, Nicaragua, and Pakistan, have experienced intense competition, multiple borrowing by clients and erosion of credit discipline which has led to repayment crises and the rapid deterioration of portfolio quality.

Internationally most countries are opting for specific regulations for MFIs, arguing that it is a 'special' sector, which needs specific regulation to enhance its quality, development, growth and to broaden the funding base. In Bolivia, the Banks and Financial Entities Law is applicable for the MFIs, so there are no separate legislation and regulation for MFIs. In Ethiopia, the National Bank for Ethiopia is supervising the MFIs sector from 1996. Bank Rakyat Indonesia is authorised by Bank Indonesia (central bank) to supervise the MFIs sector in Indonesia. Pakistan has also formulated special MFIs law where Central Bank plays a vital role. So, it is been found that the Central Bank of every country plays a vital role in supervising the MFIs sector and to ensure proper regulation for client's protection.

But there is no single regulation for supervising the MFIs sector in India. Presently, the Non Banking Financial Companies (NBFC) MFIs are governed by Reserve Bank of India (RBI) guidelines, the Section 25 Companies are governed by the Company Law and other MFIs registered as Societies, Trusts etc. are governed by the respective State Laws. Different types of laws in this sector cause discrepancies and confusion among the stakeholders of the MFIs. But the Indian MFIs used to follow some self regulations to ensure the protection for their clients.

2. Review of Literature

A number of studies have been made nationally and internationally for verifying the client protection mechanism and regulatory issues in the microfinance sector. A few of them has been pointed out below:

Issues Related to Client Protection

In 2004, The Small Enterprise Education and Promotion (SEEP) Network for its members adopted the pro-client principles, recognizing that a proactive approach to consumer protection will encourage MFIs to improve their practices before donors and regulators. Consultative Group to Assist the Poor (CGAP) (2010) has made six client protection principles which are internationally accepted for evaluating the client protection in an MFI. CGAP has also described the way of regulation for supervising the MFIs.

Sa-Dhan (2010) has made a voluntary code of conduct consisting of seven codes/principles for its member MFIs for ensuring client protection in India. This code of conduct covers Fair Practise in MFI Operation, Avoiding Over-indebtedness, Appropriate Interaction and Collection Practices, Privacy of Client's Data, Governance, Client Education and Financial Literacy, Competition and Feedback and Grievance Mechanism. Small Industrial Development Bank of India (SIDBI) and the World Bank (2011) issued a code of conduct compliance assessment (COCA) for the microfinance sector. Microfinance Management and Investment Advisory (M2i) which designed the compliance tool COCA has carried out the compliance assessment for eight institutions. The assessment has concluded that most institutions have effective systems in place to ensure that the code of conduct is practiced. The COCA examined dimensions such as client origination and targeting, loan pricing, appraisal, client data security, staff conduct, client relationship and feedback.

MF *Transparency* (2011) in their study show different ways of calculating the interest rate or price of the microfinance product. They also hoped that the launching of the India pricing database is the beginning of the process for changes for increased transparency and client protection. *Srinivasan, Agashe and Garriott (2011)* stated that Indian MFIs have largely incorporated client protection principles. They further suggested that investment in client awareness needs to be increased, and grievances redressal mechanisms need to be systematically operationalised. Loan appraisal mechanisms have to be systemized to ensure an assessment of household cash flows and appropriate loan sizes to avoid over-indebtedness. Sivasankaran and *Sarvanan (2011)* examined the relationship of social performance of MFIs with the organisational characteristics, managerial performance, operational performance and financial performances of MFIs. They concluded that the organisational characteristics of MFIs have influenced on the social performance but the managerial performance and operational performance do not have any influence on it. Again the financial performances of MFIs do not influence their social performance uniformly. *Srinivasan (2013)* pointed out that good governance enables MFIs to implement appropriate business plans, strategies, decision making and resource allocation and to adapt changes in the business environment.

Issues Related to Regulations

In March 2008, the Finance Minister tabled the 'The Micro Financial Sector (Development and Regulation) Bill, 2007' in the Lok Sabha, which was then referred to the Lok Sabha Standing Committee on Finance. But somehow the Bill has not passed in Parliament. *Arun and Murinde (2010)* stated that the performance of MFIs depends largely on regulation for MFIs which eventually affect social protection in several ways mainly through its effectiveness and outreach. *Muganga (2010)* in his thesis paper described the international scenario of regulation for the development of MFIs with special evidence from Kenya. Malegam Committee (2011) has suggested creating a separate category for NBFCs operating in the microfinance sector, such NBFCs being designated as NBFC-MFI. It also recommended an interest cap of 24% on individual loans and many other recommendations to bring transparency in the sector and to protect the clients from unethical business practices.

Again the Government of India made a draft regulation named 'Microfinance Institutions (Development and Regulation) Bill 2011' for the sector. The Bill proposed the Reserve Bank of India as the sole regulator and puts industry under a strict watch. The draft Bill gives sweeping power to the RBI by bringing all aspect of microfinance under its oversight. Finally, the 'Microfinance Institutions (Development and Regulation) Bill, 2012' – was tabled in the Indian Parliament on 29 May 2012 with slight modification, in the draft Microfinance Bill. The bill provides flexibility to RBI to apply different measures, vary the same and delegate the powers to regulate to NABARD. But the Bill has not yet passed in the parliament.

3. Objectives of the Study

The objectives of the study are –

- to study the principles and regulations regarding client protection in microfinance sector,
- to examine the client protection practices in Arohan, the leading Indian MFI based in Kolkata, West Bengal.

4. Database and Methodology of the Study

The study is based on both primary and secondary data. The secondary data have been collected from the existing literature on the subject including books, journals, articles, newspapers, reports of concerned committees and institutions, RBI guidelines, etc. The primary data have been collected through a structured questionnaire. For this purpose, field visits have been done with the clients of Arohan over five districts of West Bengal namely, North 24 Parganas, South 24 Parganas, Burdwan, Nadia and Howrah. A total of 150 clients have been surveyed for this study by taking 30 clients from each district.

Six parameters of client protection principles have been selected after analysing various parameters of client protection principles developed internationally and nationally. Then these parameters have been matched with the feedback of Arohan's clients to evaluate the client protection practices in the MFI.

5. Client Protection Principles—An Overview

Client protection is all about protecting the clients from over indebtedness, high interest rates and providing them more transparent, friendly and professional services. Client protection is a customer service issue, a public relations issue, and a regulatory issue and in a competitive setting an issue that will ultimately affect the MFIs' long term market share. Organisations like CGAP, Sa-Dhan, Smart Campaign, The SEEP Network (along with its members ACCION International, CARE, MicroFinance Network, Freedom From Hunger, etc) are working on developing client protection principles and guidelines. The SEEP Network has formed SEEP Consumer Protection Working Group (CPWG) in 2002 to increase the transparency of MFI policies regarding consumer protection.

The Client Protection Principles describe the minimum protection of microfinance clients should expect from providers. While the principles are universal, meaningful and effective implementation will require careful attention to the diversity within the provider community and conditions in different markets and country contexts. In this section, we have summarised the Client Protection Principles developed by different research organisations nationally and internationally.

5.1. CGAP-Client Protection Principle

The CGAP conducted various research works for ensuring social performance and client protection in MFIs worldwide. According to CGAP the MFIs that provide financial services to low-income clients should adhere to the following six core principles:

a) Avoidance of Over-Indebtedness: Providers will take reasonable steps to ensure that credit will be extended only if borrowers have demonstrated an adequate ability to repay loans and will not put borrowers at significant risk of over-indebtedness. Similarly, providers will take adequate care that non-credit, financial products (such as insurance) are extended to low-income clients.

b) Transparent Pricing: The pricing, terms, and conditions of financial products (including interest charges, insurance premiums, all fees, etc.) will be transparent and will be adequately disclosed in a form understandable to clients.

c) Appropriate Collection Practices: Debt collection practices of providers will not be abusive or coercive.

d) Ethical Staff Behaviour: Staff of financial service providers will comply with high ethical standards in their interaction with microfinance clients and such providers will ensure that adequate safeguards are in place to detect and correct corruption or mistreatment of clients.

e) Mechanisms for Redressal of Grievances: Providers will have in place timely and responsive mechanisms for complaints and problem resolution for their clients.

f) Privacy of Client Data: The privacy of individual client data will be respected and such data cannot be used for other purposes without the express permission of the client.

5.2. SA-DHAN Client Protection Principle

The basic tenet of client protection is to understand the client's needs and situation while delivering micro financial services. This section analyses the level of code compliance towards client protection under different sub-sections of the Code of Conduct developed by Sa-Dhan.

a) Fair practice: Fair practice requires:

- MFI should not discriminate on the basis of caste and religion.
- MFI should share the benefits of cost reduction/profits with the clients.
- The MFI should not collect any collateral from the clients for small loan size (Rs 50,000 and below) loans.

b) Avoiding over indebtedness: This principle requires that the MFI should carefully analyse the repayment capacity of the clients before extending loans to them. Analysis of repayment capacity includes analysis of income and expense patterns as well as indebtedness.

c) Appropriate interaction and collection practices : Sa-Dhan proposed the following guidelines to control specific aspects of behaviour:

- Staff would not confront the clients or their family members under any situation.
- The staff would not enter the house of the client for recovery of loans.
- Staff would visit clients only with the group leaders. More than two staff would not visit the client together for recovery.
- Staff would not insist on recoveries in case there is severe illness in the family of the clients.

d) Privacy of client's data: This dimension of the code requires that documents and information obtained from the clients are kept secure and are not disclosed without prior permission from the clients. Most of the MFIs have a policy of keeping the documents obtained from the clients under the custody of the senior staff in the branches (usually the branch managers). The documents are barred from unauthorised access by outsiders.

e) Governance : Sa-Dhan's Code of Conduct on Governance requires the following:
   - The MFI should have independent members in its Board of Directors. This is to ensure that the affairs of the organisation are subject to scrutiny by independent persons.
   - The annual compensation of the CEO should be approved by the Board. This is to ensure check on the CEOs taking unreasonably high level of salaries for themselves.

f) Client education and financial literacy: The Code of Conduct requires the MFIs to provide regular training to their clients on issues pertaining to financial literacy so that they are able to take an informed decision about their financial affairs. It is also imperative that MFIs should conduct basic financial literacy programmes to make the clients responsible borrowers avoiding over indebtedness. This will also help manage the default risk better.

a) Competition: Sa-Dhan's Code of Conduct requires the MFIs to regularly and proactively interact with other MFIs in the operational area to avoid over-indebtedness, to have precise guidelines for recruiting staff members from other MFIs and to consciously go to the areas which are un-served or underserved.

b) Feedback and Grievance Mechanism: A sound feedback and grievance redressal mechanism is essential for the MFIs to maintain healthy relationship with their clients. This mechanism can also serve as an effective control system against staff fraud or other malpractices.

5.3. Smart Campaign

The Smart Campaign is a global campaign consisting of microfinance lenders, institutions and associations from around the world who believe that protecting clients is not only the right thing to do, but the smart thing to do. Launched in March 2009, the goal of Smart Campaign is to make sure financial service providers treat customers fairly, and avoid offering financial products that could harm or expose clients to unnecessary risks. The Campaign is working to establish standards for the appropriate treatment of low-income clients based on six Client Protection Principles: Avoidance of over-indebtedness; transparent pricing; appropriate collections practices; ethical staff behaviour; mechanisms for redress of grievances and privacy of client data.

After considering the above principles, six parameters have been selected for evaluating the client protection practices of Arohan. These are:

(a) Over-indebtedness of the Clients, (b) Transparent Pricing, (c) Collection Practices, (d) Ethical Staff Behaviour, (e) Mechanism for Redress of Grievance and (f) Privacy of Clients data.

6. Regulation for Client Protection in Indian MFI Sector—Present Scenario

As there is no single regulation for supervising the MFIs in India, multiple regulatory practices are being followed in Indian MFIs. There are some proposals from the RBI and National Bank for Agricultural and Rural Development (NABARD) and the government to regulate this sector. RBI formed Malegam Committee to study this sector and the committee has already submitted their proposals to the RBI. The Government of India has made a draft regulation named Microfinance Institutions (Development and Regulation) Bill 2011 for submitting before the Parliament. So there are some ongoing proposals for regulating this MFI sector. In this section we have briefly described the proposals of these regulations.

6.1. Self Regulation in MFIs

The MFIs operating in India have some of their own system of operations and principles to provide better services and to satisfy their clients. These system and provisions varies from MFI to MFI. These own norms, principles i.e. self regulation plays an important role to safeguard the interest of the clients. Self-regulation means prudential regulation (or supervision) by a body that is effectively controlled (whether in law or in fact) by the regulated entities, not by the government supervisor.

In India, organisation likes Microfinance Transparency working on increasing transparency and accountability in MFI sector. Sa-Dhan, has made some core values and voluntary mutual code of conduct for its member MFIs in India to ensure better transparency and better clients' protection. All the 236 MFI members of Sa-Dhan in India unanimously and whole-heartedly agree to abide by these guidelines. It has made Voluntary Mutually Code of Conduct for its members to provide all the necessary information to their clients regarding (a) terms and conditions of financial services (b) interest rate (c) premium of insurance (d) periodical statement, etc. It also made guidelines to provide microfinance services to the low income clients irrespective of gender, race, caste, religion or language. It also suggested to maintain high standard of governance, fairness and transparency in the operations of the MFIs. All the members of Sa-Dhan have to follow up this Code of Conduct and in case of failure to abide by these guidelines the membership of the MFI is liable to be cancelled.

6.2. Andhra Pradesh Micro Finance Institutions (Regulation of Money Lending) Ordinance, 2010

The Andhra Pradesh Ordinance, 2010 made it mandatory for all the MFIs operating in the State of Andhra Pradesh to apply for registration before the Registering Authority of the district specifying therein the villages or towns in which they have been operating or propose to operate, the rate of interest being charged or proposed to be charged, system of conducting due diligence and system of effecting recovery. The Ordinance also tried to ensure that the member of an Self Help Group (SHG) shall not be a member of more than one SHG and no MFI shall seek any security from a borrower by way of pawn, pledge or other security for the loan.

The main features of this Ordinance are as follows:

- All MFIs shall display the rates of interest charged by them in a conspicuous place in their premises in bold letters visible to the members of the public.
- No MFI shall charge any other amount from the borrower except any charge prescribed in the Rules for submission of an application for grant of a loan.

6.3. The Microfinance Institutions (Development and Regulation) Bill, 2011

The Ministry of Finance of India released the much awaited draft microfinance bill which has been introduced in the Parliament shortly. The consultative process adopted, the work done by the Malegam Committee, and the regulations issued by the RBI and the participation of the lenders, practitioners and others have made the draft comprehensive and well-rounded. The main features of the Bill are that every institution in microfinance should register with the regulator, transform into a company when they attain a significant size, be subject to a variety of prudential and operational guidelines that are introduced by the regulator, provide periodic information to the regulator and face penal action for violation of law or any rules framed. The Bill provides flexibility to RBI to apply different measures, vary the same and delegate the powers to regulate to NABARD.

The grievance redressal procedures, mandatory enrolment to credit bureaus and code of conduct enforcement through industry associations will improve customer protection. The creation of national and state councils should provide wider sector participation in policy making. The proposed microfinance fund that would not only provide grants but also bulk finance to MFIs is a very welcome proposition.

Sections 23 and 24 of the proposed Bill contain the substance of RBI's regulatory powers. The powers of RBI is to issue directions under section 24 are comprehensive and cover almost all aspects of functioning of the MFIs. While there seems to be a provision for recognition of Self-Regulatory Organization of MFIs, the process of recognition has not been spelt out. The industry associations have a critical role to play in assisting the regulators. In section 25, the bill has chosen to implement margin caps rather than interest rate caps. Absolute interest rate caps are anti-market and introduce rigidities. If any provision of this Act is contravened or if any default is made in complying with any other requirement of this Act or of any rules, regulations or orders or directions given or notification issued or condition imposed thereunder, any person guilty of such contravention or default shall be punishable with fine which may extend to five lakh rupees and where, a contravention or default is a continuing one, with further fine, which may extend to ten thousand rupees for everyday after the first, during which the contravention or default continues or with imprisonment for a term not exceeding two years or with both.[1]

7. Analysis of Client Protection Mechanism in Arohan

In this section, an attempt has been made to examine the client protection practices in Arohan with the feedback from the clients. We were able to reach altogether 150 clients of Arohan through a structured questionnaire by taking 30 clients each from five districts of West Bengal.

Arohan was established in 2005 and started operations in January 2006 in Kolkata, with the aim of catering to the credit needs of the under-served urban population of Eastern India. Arohan's early operations were restricted to Kolkata and its surrounding semi-urban areas. Clients remain at the core of Arohan's operations. Performance of Arohan is shown in Table-1.

Table-1 : Arohan Performance as on 31st December, 2015

Total Number of customer	4,68,571
Number of States covered	5
Number of branches	180
Assets under Management	536.3 crore
Repayment Rate	99.61%

(**Source:** http://www.arohan.in/content.php?seo_url=newsletter-oct-dec-2015/)

7.1. Demographic Profile of the Clients

The basic demographic and biographic profiles of the client-base are as follows:

- All of the respondents are female.
- Almost two third of the clients belongs to rural area (64%) and remaining one third (36%) are from urban area.
- Maximum of the respondents are from age group of 26-35 years (44%), followed by 32% from 36-45 years age group and 14% from 15-25 age group. Very few are the age group of 46 years and above.
- 62% of the respondents are listed as Below Poverty Level and remaining of the respondents are from Above Poverty Level category.
- Approximately two third of the respondents are from Hindu Religion and remaining 32% are from other religion.

7.2. Analysis of Feedback of the Clients regarding Client Protection Mechanism

The client protection mechanism of Arohan has been examined by six sub-parameters. These are: (a) Over-indebtedness of the Clients, (b) Transparent Pricing, (c) Collection Practices, (d) Ethical Staff Behaviour, (e) Grievance Redress Mechanism and (f) Privacy of Clients data. These are discussed below:

a) *Over-indebtedness of the Clients*

The over-indebtednesses of the clients have been analysed on the basis of four issues like availing of multiple loan, sources of the multiple loan, amount of multiple loan and total indebtedness of the clients.

(i) *Availing of Multiple Loan*

One of the most important reasons for over-indebtedness of the clients is availing of multiple loans. The main sources of availing multiple loans are identified as MFIs, Swarnajayanti Gram Swarozgar Yjana (SGSY) or SHGs, Bank and Informal sources like friends, relative etc. Table-2 summarises the sources of the second loan of the respondents.

Table-2 : Sources of Second Loan of the Respondents

MFI name	Sources of Second/Multiple Loan				Total Multiple Loan	Total Clients	Percentage in terms of total client of the MFI (%)
	MFI	SGSY/ SHGs	BANK	Informal Sources			
Arohan	37	8	1	8	54	150	36
Percentage	**68.6**	**14.8**	**1.8**	**14.8**	**100**	–	–

(**Source:** Field Survey by the Resercher)

It is found that overall 36% of the clients surveyed have availed multiple loans. Among the total 54 multiple loans, 37 (68.6%) have been taken from different MFIs. Bandhan has provided the maximum multiple loans among the MFIs. Only 1 client preferred to go to bank for availing any further loan. The study hence proves the traditional believe that the low earning people prefer informal borrowing (14.8%) rather than the borrowing from banks.

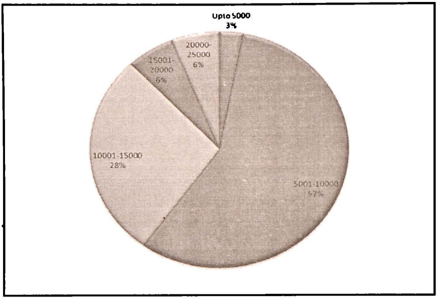
(ii) *Amount of Second Loan/Multiple Loans*

The amount of second loan/multiple loans ranges from Rs. 5,000 to Rs. 25,000. The Figure-1 below shows that 57% of the second loan ranges from Rs. 5,000- Rs. 10,000, 28% ranges from Rs.10,001- Rs. 15,000, and 6% ranges from Rs.15,001- Rs. 20,000. Only 6% of the clients have availed second loan ranging from Rs. 20,000- Rs. 25,000. A meagre 3% of the clients have availed second loan up to Rs. 5,000.

(iii) *Total Debt/Loan amount of the Multiple Borrowers*

Further an attempt has been made to find out the total debt/loan amount of the multiple borrowers and to examine whether the total debt have crossed the RBI prescribed limit of Rs. 50,000 for microfinance borrowers or not. If the total debt of the multiple borrowers are above Rs. 50,000, it can be said that the clients are over-indebted and vice-versa. Table -3 shows the ranges of total debt of the multiple borrowers.

Figure-1: Amount of Second Loan/Multiple loans



(Source: Field Survey by the Researcher)

Table-3 : Total Debt/Loan amount of the Multiple Borrowers

Total Loan Amount	Frequency	Percentage
10001-20000	15	27.78
20001-30000	20	37.04
30001-40000	8	14.81
40001-50000	6	11.11
Above 50000	5	9.26
Total	**54**	**100%**

Source: Field Survey by the Researcher

The above table found that the total debt of 9.26% of the multiple borrowers have exceeded RBI ceiling of loan of Rs 50,000 for a single borrower. So it can be said that among the total clients of 150, 3.33% are over-indebted. MFIs should cross check the other loans taken by the borrowers before sanctioning loans for controlling over the over-indebtedness of the clients.

b) *Transparent Pricing*

The survey found that most of the clients know about the installment amount of the loan as in every week they have to pay the loan installment. 82% of the clients can rightly say about their loan amount and total repayment period. Again most of the respondents are aware about the 'Group Warranty' i.e. if any one of the members failed to repay her installment, the other group members will pay the installment amount collectively.

80% (120) of the respondents know about the interest rate charged by the MFIs for the loan. But on the other hand only one-third (34%) of the respondents are aware about the 'other charges' of the loan like processing fees. Only 58% (87) respondents can explain the insurance coverage of the credit life insurance. Again for evaluating the practices of 'Transparent Pricing', four factors related to pricing have been considered. These are satisfaction with the interest rate of the loan, preferable interest rate of the respondents, collateral for granting loan, matching of insurance with the need and capacity of the clients.

(i) Satisfaction with the Interest Rate of the Loan

Rate of interest is one of the debated issues in microfinance sector as the rates are normally higher than the banking rate. The clients were asked to scale their satisfaction about the rate of interest charged by their corresponding MFIs. The five point Likert scale of satisfaction were considered for this. The results of the scaling are summarized below in Table-4.

Table-4 : Satisfaction with the Interest Rate of the Loan

Satisfaction Level	Frequency	Percent
Highly Satisfied	3	2
Satisfied	90	60
Neither Satisfied nor Dissatisfied	42	28
Dissatisfied	12	8
Highly Dissatisfied	3	2
Total	**150**	**100**

Source: Field Survey by the researcher

The above table shows that only 2% of the clients are highly satisfied with the rate of interest whereas 60 % clients are satisfied with it. But 8% of the clients expressed their dissatisfaction with the interest rate. The door step services provided by the MFIs for providing and collecting the loans, weekly collection practices etc. have compensated the high rate of interest rate to the clients.

(ii) Preferable Interest Rate of the Respondents

The field survey reveals that most of the respondents prefer the rate of interest between the ranges of 19-24% and only 10% like to pay interest of 25-27% for their loans. The high rate of interest is the most controversial issue in the microfinance sector, but the clients are not so concerned about it. Rural women who are the main clients of MFIs know it very well that neither the formal banking sector will offer them any loan, nor will provide doorstep services. At the same time, the local moneylender used to charge 3-5% per month i.e. 36-60% per annum for providing loan after taking collateral. So, in this situation, the rate of interest charged by the MFI is comparatively cheaper to the clients of the microfinance sector.

(iii) Collateral for granting Loan

In microfinance sector, the tradition is not to take any collateral for sanctioning loan. In the field survey, the researcher has not found any collateral system in the sector.

(iv) Matching of Insurance with the Need and Capacity of the Clients

All the female clients of Arohan are provided with credit life insurance. Normally the MFIs charge Rs. 4 for every Rs. 1,000 of loan as insurance premium which is paid once at the time of taking loan. The insurance coverage is given for loan tenure only. Table-5 examines the matching of insurance with the need and capacity of the clients.

Table-5 : Matching of Insurance with the Need and Capacity of the Clients

	Frequenciy	Percent
Perfectly matched	66	44
Somewhat matched	63	42
Neither matched nor mismatched	3	2
Mismatched	18	12
Fully mismatched	0	0
Total	150	100.0

Source: Field Survey by the researcher

Majority of the respondents said that the insurance provided by the MFIs perfectly match with their need and capacity. Only 12% said the insurances are mismatched with their need and capacity.

c) Collection Practices

As per the normal practices of the sector, the MFI's loans are repaid at a rate of 98 % or more. These practices have also been reflected in the field survey. 98-99 % of the clients repaid their loan in stipulated time period. However, the repayment rate has dropped in many cases due to the negative media coverage after the Andhra Pradesh crisis.

Somehow if any of the clients failed to repay their loan installment due to illness or absence in the weekly/monthly repayment meeting, the other group members repaid the amount collectively or individually. However, in some cases indirect pressurization through the group members have been found for ensuring repayment in time.

d) Ethical Staff Behaviour

The clients were asked to scale the behavior of the field staff on the basis of five point Likert scale. The results are summarized below in Table-6:

Table-6 : Staff Behaviour of the MFIs

Staff Behaviour	Frequency	Percent
Very friendly and Co-operative	101	67.34
Friendly and Cooperative	36	24.00
Neither friendly nor Non-Cooperative	1	0.66
Unfriendly and Non-Cooperative	12	8.00
Very Unfriendly and Non-Cooperative	0	0
Total	**150**	**100.0**

Source: Field Survey by the researcher

It has been found that most of the clients (67.34%) are satisfied with the behaviour of the staff as they think that the staffs are 'very friendly and cooperative'. Only 8 % of the clients have expressed their dissatisfaction by stating that the staffs are 'unfriendly and non-cooperative'. None have said that the staffs are 'very unfriendly and non-cooperative'.

e) Grievance Redress Mechanism

At the time of sanctioning loan to the clients, the employees of Arohan discuss about the mechanism of lodging complaint to the clients. Our survey found that 70 % of the respondents know about the procedure of registering complaints regarding any matter to the MFIs. The clients are mainly aware about the branch manager and the printed telephone number for registering complaints. The survey reveals that only 62 % of the clients are aware about the telephone number for registering complaints. But a very few among them have used the number. They have used the telephone number mainly for knowing the information about loan.

f) Privacy of Client's Data

It has been found from the survey that privacy of the client's data is not so important factor to the clients. MFIs demanded that they informed their clients about the privacy of their data, but in field survey the respondents told something different. The survey shows that only 28% of the clients are aware about the privacy of their data. Most of the respondents (72%) are not aware about the privacy of their data. The Cross Tabulation in Table-7 below shows the relation between the educational qualification and the awareness about the privacy of data among the clients.

Table-7 : Cross Tabulation of Educational Qualification and awareness about the Privacy of Data

Educational Qualification	Awareness about the Privacy		Total
	Aware	Not aware	
Illiterate	1	4	5
Literate	22	81	103
Eight pass	12	20	32
Madhyamik	4	3	7
Graduation	2	0	2
Masters	1	0	1
Total	**42** (28%)	**108** (72%)	**150**

Source: Field Survey by the researcher

The above cross tabulation found that the awareness about the privacy of data increases with the increase in education qualification.

8. Conclusion and Recommendations

The study found that the MFIs inform their clients about interest, processing charges, insurance charges, loan amount, instalment, etc, before granting loan and the clients also accepted that they are informed about these issues. The rates of interest charged by the MFIs are within the prescribed limit of RBI i.e., 26%. The clients are also somewhat satisfied with the rate of interest. But through field survey it has been found that many clients do not know the exact interest rate, processing fees, benefits of insurance etc. The clients are well aware about amount and number of loan instalments. However, rate of interest is a less important issue to the clients. They know very well that they will not be able to get the loan so easily from the banks and will not be provided with doorstep services in any way. So, the clients are ready to compensate those facilities with high rate of interest.

Multi-borrowing practices have been found in the survey. The total debt of 9.26% of the multiple borrowers have exceeded RBI ceiling of loan of Rs 50,000 for a single borrower. So it can be said that among the total borrowers of 150, 3.33% are over-indebted. The researcher has not found any case of coercive method of collection or pressurization for repayment of loan. However, in some cases indirect pressurization through the group members have been found for ensuring repayment in time. According to the field/collection officers, on time repayment is a good practice in microfinance borrowing and that have helped the MFIs to lend without collateral. If any client stops repaying without proper reason, the other will follow it and the whole system will collapse. Maximum of the respondents are satisfied with the employees behaviour of the MFIs. Regarding the privacy of client's data, maximum MFIs used to store the data through computerised Management Information System (MIS). But the clients are not aware or worried about the privacy of their information.

The MFIs should take initiatives to clearly spell out the interest rate, processing charges, insurance charges, repayment period and group warranty before sanctioning loan to the clients. As well as Arohan should cross check the other loans taken by the borrowers before sanctioning loans to control over the over-indebtedness of the clients. It must consider seriously about adopting modern technologies in their operations so that they can provide their services in cost effective way and can reduce their rate of interest. As of now, privacy as a principle is not a priority for MFIs in West Bengal. However, Arohan will need to provide client information to the credit bureaus for their effective functioning, which should be informed to the clients.

The revised Microfinance Institutions (Development and Regulation) Bill, 2012, has been tabled in the Parliament where it has been referred to the Standing Committee on Finance of the Parliament. But the Bill has not passed in the last four years. As early as the Bill is passed, the sector will be more transparent and safer for all the stakeholders.

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Revisiting Random Walk Hypothesis in Indian Stock Market–An Empirical Study on Bombay Stock Exchange

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Abstract: Predicting or modeling future movements in asset prices had always been the top priority among the investors and analysts ever since the introduction of formal securities market dealings. However in most of the cases it was found that such movements are fairly random and hence unpredictable. The quest to identify the reason behind such phenomenon led to two of the best known theories in the history of finance - the Random Walk Hypothesis and the Efficient Market Hypothesis. This article has attempted to revisit Random Walk Hypothesis in Indian stock market so as to identify whether Indian stock market can be considered efficient, at least in the weak form.

Key-words: Random walk, efficiency, unit root, variance ratio, serial correlation.

1. Introduction

Predicting or modeling future movements in asset prices had always been the top priority among the investors and analysts ever since the introduction of formal securities market dealings. However in most of the cases such efforts were found to be useless as price movements are fairly random and hence unpredictable. The quest to identify the reason behind such phenomenon led to one of the best known theories in the history of finance–the Random Walk Hypothesis (RWH). But do markets really follow Random Walk? Numerous studies were conducted all over the world to test RWH in actual market conditions with mixed results. In this context the studies conducted in Indian bourses relied upon the traditional techniques only and hence are not conclusive. Fortunately recent developments in time series analysis have provided ample measures that can produce corroborative results in this respect. In addition the developments in the stock exchange operations during last two decades have also necessitated a relook over the issue.

Thus in this article attempt has been made to revisit RWH in Indian stock market to form a conclusive opinion as to whether Indian bourses are consistent with RWH and whether the stock market can be considered efficient, at least in the weak form.

2. Random Walk Hypothesis; Historical Background

'Random behaviour of prices' was first conceptualized by a French broker Jules Regnault in one of his books published in 1863. However he used the concept only to describe the movement of stock prices and did not provide any logical explanation. In 1900, *Bachelier* in his Ph.D dissertation studied the behaviour of commodity prices and found the movements to be random.

Unfortunately Bachelier's contribution was overlooked. Later studies by *Working (1934)* and *Cowles and Jones (1937)* also revealed that US stock prices and other economic series also exhibit some random characteristics. Hence by the end of 1940s, there was scattered evidence in favour of the random behavior of asset prices.

In 1953, *Kendall* examined the behaviour of 22 U.K. stock and commodity price series in search of regular cycles. Instead of discovering any regular price cycle, he found each series to follow a random walk, implying that successive price changes are independent of one another.

Regarding stock price behaviour only, *Roberts (1959)* was among the first to question the existence of any systematic pattern in stock prices. Robert demonstrated that a series of cumulative random numbers, which are obviously free from any systematic pattern, may closely resemble the actual stock price series but changes in the stock prices do not exhibit any pattern just like the changes in random numbers. He concluded that the 'patterns' observed in stock prices may be as illusory as those generated by random numbers and hence of no use for prediction.

Support was also there from another interesting study conducted by *Osborn (1959)*, an eminent physicist, who observed that US stock price behaviour was similar to the movement of very small insoluble particles suspended in a liquid medium- known as 'Brownian Motion' in physics.

In 1965 Fama's doctoral dissertation was reproduced, in its entirety, in the *Journal of Business*. Based on a thorough review of the existing literature on stock price behaviour and examinations on the distribution and serial dependence of stock market returns, the paper claimed to provide strong evidence in favour of the random walk hypothesis.

Furthermore, notable financial analysts like Granger and Morgenstern also provided substantial empirical support for the random walk phenomenon; using some statistical tests of dependence between successive stock price changes (e.g. Serial Correlation and Run Test they found generally insignificant departures from randomness. Finally, *Samuelson (1965)* provided a rational and scientific explanation to this phenomenon by way of Efficient Market Theory.

3. Random Walk Hypothesis; the Concept

According to Random Walk model, security prices will behave randomly, i.e., there will be no dependence between successive price changes and as a consequence any trading strategy based on past price series will be of no use. This is because, as per Efficient Market Hypothesis, in an efficient market any new information will be rapidly incorporated in the security prices in an unbiased manner. As a result the price change will be totally random and unpredictable. However, RWH is consistent with the weak form of efficient capital market only and not with the semi-strong or strong form.

4. Literature Review

Studies in International Context

After the initial era (as already discussed in historical background), the studies on random walk behavior of security prices again got momentum in 1980s. *Porterba and Summers (1988)* confirmed the presence of mean reverting tendency and absence of random walk in the U.S. Stocks. *Lo and McKinney (1988)* applied variance ratio test on stock prices and provided evidence against random walk hypothesis for the entire sample period of 1962 to 1985.

Fama and French (1988) found that almost forty percentage of variation of longer holding period returns were predictable from the information on past returns for U.S. Stock markets. Culter et al. (1990) found strong evidence of mean reversion and predictability of the US stock market return. *Kim et at. (1991)* examined the pattern of stock prices by using weekly and monthly returns in five Pacific-Basin Stock Markets and found that all stock markets except Japanese stock market did not follow random walk. *Olowe (1999)* showed that the Nigerian stock market is not efficient in the weak form. *Shiguang and Michelle (2001)* tested both Shanghai and Shenzen stock market for efficient market hypothesis using serial correlation, runs and variance ratio test to index and individual share data for daily, weekly and monthly frequencies and found that Chinese stock markets were not weak form efficient. *Chakraborty (2006)* investigated the stock price behaviour of Sri Lankan stock market using daily closing figures of Milanka Price Index along with twenty-five underlying individual companies included in the index. The study found that stock market in Sri Lanka did not follow random walk. Similar observations were made by other researchers in their studies on other emerging securities market in recent times.

Studies in Indian Context

Instances of studies on the random behaviour of stock prices in Indian bourses can be found as early as 1970s. *Rao and Mukherjee (1971)* attempted to test the random walk model using spectral analysis and concluded that the random walk hypothesis held for the company studied. *Ray (1976)* constructed index series for six industries as well as for all industries and tested the hypothesis of independence on these series. He obtained mixed results, though evidence was more towards rejection of the null hypothesis of independence. *Sharma and Kennedy (1977)* compared the behaviour of stock indices of the Bombay, London and New York Stock Exchanges during 1963-73 using run test and spectral analysis and confirmed the random movement of stock indices for all the three stock exchanges. *Kulkarni (1978)* investigated the weekly RBI stock price indices for Bombay, Calcutta, Delhi, Madras and Ahmedabad stock exchanges and monthly indices of six different industries by using spectral method. He concluded that there is a repeated cycle of four weeks for weekly prices and seasonality in monthly prices. This study has thus rejected the hypothesis that stock price changes were random. *Barua (1981)* analyzed daily price changes of 20 securities and *Economic Times* index from July 1977 to June 1979. He found no dependence in individual security price changes but the market index exhibited significant serial dependence. *Sharma (1983)* analyzed weekly returns of 23 actively traded stocks in BSE over the period 1973-78. The integrated moving average from the random walk model was fitted on the series and was found to be an adequate representation of price changes except for two stocks. These are the stocks for which no adjustment was made for rights and bonus issues. In a more comprehensive study, *Gupta (1985)* tested random walk hypothesis using daily and weekly share prices of 39 shares together with the *Economic Times* and *Financial Express* indices of share prices. He concluded that the Indian stock markets might be termed as competitive and 'weakly' efficient in pricing shares. *Ramachandran (1985)* tested weekend prices of 60 stocks covering the period 1976-81 for the weak form of EMH. He used filter rule tests in addition to runs and serial correlation tests and found support for the weak form of EMH. In a more recent study *Rao (1988)* examined weekend price data over the period July 1982 to June 1987 for ten blue chip companies by means of serial correlation analysis, runs tests and filter rules only to confirm the weak form of efficiency. *Yalawar (1988)* studied the monthly closing prices of 122 stocks listed on the Bombay Stock Exchange during the period 1963-82. He used Spearman's rank correlation test and runs test and found that only 21 out of 122 lag 1 correlation coefficients were significant at 5% level thereby supporting the weak form efficiency. *Obeidullah (1991)* used weekly prices covering the period 1985-88 and examined serial correlation and runs. He found significant support for the weak form of EMH.

Poshakwale (1996) studied the daily prices of BSE National Index for the period 1987-94 to test existence of day of the week effect in BSE. He used K-S Goodness of Fit test, serial correlation test and run test and found that weekend effect is evident thus rejecting any possibility of weak form efficiency. *Pandey (2003)* in his study on NSE indices used the daily and weekly values of three leading indices namely CNX DEFTY, CNX NIFTY and CNX NIFTY JUNIOR for the period 1996-2002. He performed autocorrelation analyses and runs test and concluded that the series of stock indices in the India Stock Market are biased random time series. In a more recent attempt, *Srinivasan (2010)* studied the daily closing values of CNX NIFTY and the BSE SENSEX for the period 1st July 1997 to 31st August 2010 using more advanced test techniques like ADF test and PP test. The results confirmed that the return series does not contain any unit root and hence the market is not efficient in the weak form. *Mishra (2010)* also confirmed the same results on both BSE and NSE as documented by *Srinivasan (2010)*.

5. Objective of the Study

As evident from the discussion in the literature review section, while the studies on foreign stock exchanges always relied upon advance test techniques, the studies conducted on Indian bourses used mostly the traditional test techniques (except in a few recent cases). Therefore, the general belief that Indian bourses do satisfy the RWH and accordingly are efficient in weak form is quite doubtful. Moreover the recent development measures by stock exchanges and capital market regulator, i.e., SEBI have also changed the scenario a lot. Hence the primary objective of the study will be

- To reassess the validity of RWH in Indian stock market with a special reference to the Bombay Stock Exchange (BSE) by applying advanced statistical techniques in addition to the traditional techniques,

against the secondary objective to justify the weak form efficiency of BSE and of Indian Stock market.

6. Sample and Data

To achieve the stated objective, this study has considered four major indices of Bombay Stock Exchange namely BSE 30 (popularly known as SENSEX), BSE 100, BSE 200 and BSE 500.

The four indices are selected because of their popularity and extensive use as benchmark to represent mid-cap, small-cap and large-cap companies by most of the mutual funds and industry experts.

The period of the study has been taken to be the period starting from 01.04.2005 up to 31.03.2015 for each index.

Daily closing index values were collected for each of the four indices for the above specified period to calculate the daily returns on each index. The data-source used for this purpose is the official website of BSE.

The return is calculated as the logarithmic difference between two consecutive prices in a series, yielding continuously compounded returns. The reasons to take logarithm returns are justified by both theoretically and empirically.

Theoretically, logarithmic returns are analytically more tractable. On the other hand, empirically logarithmic returns are more likely to be normally distributed which is a prior condition of many standard statistical tests employed in analyzing financial time series. Daily index returns ($\mathbf{R}_t$) are calculated as:

$\mathbf{R}_t = \mathbf{Ln}\ (\mathbf{I}_t / \mathbf{I}_{t-1})$, Where, $\mathbf{R}_t$ = return at period t; $\mathbf{I}_t$ = Index value at the end of period t.

Statistical tests are applied on the return series calculated as above.

7. Methodology

The study has considered a few advanced test techniques less familiar in this kind of studies conducted on Indian bourses, along with the popular and well known techniques. The popular list includes Serial or Auto Correlation Test and Run Test whereas the advanced techniques include Ljung–Box (*Q*) Statistic, Unit Root tests and Variance Ratio test. These are discussed below.

Serial/Auto Correlation Test

Serial correlation (also called Auto-correlation) measures the correlation between price changes in consecutive time periods. Hence, a serial correlation that is positive and statistically significant could be viewed as an evidence of price momentum in markets and would suggest that returns in a period are more likely to be positive (negative) if the prior period's returns were positive (negative). Similarly a negative serial correlation, which is statistically significant, could be an evidence of price reversal. But if the serial correlation is found to be zero or statistically insignificant, it will confirm independence of successive price changes which is the pre condition for a random walk.

Serial/Auto correlation function for the series Y_t is measured by the following formula:

Auto-correlation at lag k, i.e., $ACF(k) = \frac{\sum_{t=k+1}^{n}(Y_t - \bar{Y})(Y_{t-k} - \bar{Y})}{\sum_{t=1}^{n}(Y_t - \bar{Y})^2}$ where $\bar{Y}$ = sample mean of Y and n = length of the series.

The standard error of ACF (k) is given by:

$$Se_{ACF(k)} = \frac{1}{\sqrt{n-k}}$$

When n is sufficiently large, i.e., n ≥ 50, it is reduced to

$$Se_{ACF(k)} = \frac{1}{\sqrt{n}}$$

To test whether ACF (k) is significantly different from zero, t statistic is calculated as:

$$t = \frac{ACF(k)}{Se_{ACF(k)}}$$

If t statistic is found to be significant, it confirms independence of successive price changes and hence random walk of return series.

Ljung–Box (Q) Statistic

Ljung–Box portmanteau statistic (Q) is used to test the joint hypothesis that all autocorrelations up to a certain lag are simultaneously equal to zero. The Ljung–Box Q statistic is given by: $Q^* = T(T+2)\sum_{k=1}^{m}\frac{\hat{\tau}_k^2}{T-k} \sim \chi_m^2$ where T = no. of observations and τ_k= k-th autocorrelation.

Under the null hypothesis of zero autocorrelation at the first *m* autocorrelations, the Ljung–Box Q-statistic is also distributed as Chi-squared with degrees of freedom equal to the number of autocorrelations (m). Existence of significant Q statistic is a clear indication of the series being non-random with successive changes being non-independent.

Run Test

Though Serial Correlation based test techniques are quite useful, it requires a basic assumption that the series follows normal distribution. Hence for any series which does not follow normal distribution, the serial correlation test results cannot be conclusive. Here arises the importance of Run Test which is a non-parametric test in which the number of sequences of consecutive positive and negative returns is tabulated and compared against its sampling distribution under the random walk hypothesis. A run is defined as the repeated occurrence of the same value or category of a variable. Stock price runs can be positive, negative, or have no change. The length is how often a run type occurs in succession. Under the null hypothesis that successive outcomes are independent, the total expected number of runs is distributed as normal with the following mean (μ) and S.D. (σ):

$$\mu = \frac{N(N+1) - \sum_{i=1}^{3} n_i^2}{N}$$

$$\sigma = \left[\frac{\sum_{i=1}^{3}\left[\sum_{i=1}^{3} n_i^2 + N(N+1)\right] - 2N\left(\sum_{i=1}^{3} n_i^3 - N^3\right)}{N^2(N-1)}\right]^{1/2}$$

Where n_i is the number of runs of type *i* and N stands for total number of price changes. The test for serial dependence is carried out by comparing the actual number of runs, a_r in the return series, to the expected number μ. The resultant z statistic is:

$$Z = \frac{a_r - \mu}{\sigma}$$

If the Z statistic is found to be insignificant, random walk of the return series is confirmed.

Unit Root Tests

These tests are used to identify whether a given time series is non-stationary or not. A series is said to be non-stationary if it has a time varying (i.e. dependent on time) mean or time varying variance or both. By contrast, a weak stationary time series has both its mean and variance constant over time. Such a time series will tend to return to its mean (mean reversion) and fluctuations around the mean will have broadly constant amplitude.

A Random Walk Model is necessarily a non-stationary process. However, there are three different forms of random walk.

(i) Pure Random Walk: A pure random walk is defined as $Y_t = Y_{t-1} + u_t$ where the value of Y at time t is equal to its previous value and a random shock. This is also known as random walk without drift (or without intercept). Since $E(u_t) = 0$, $E(Y_t) = Y_0$ and $V(Y_t) = t\sigma^2$, i.e., a pure random walk has a constant mean but its variance is dependent on time. Thus a pure random walk is a non-stationary process.

(ii) Random Walk with Drift: A random walk with drift is defined as $Y_t = \alpha + Y_{t-1} + u_t$. Here also $E(Y_t) = t\alpha + Y_0$ and $V(Y_t) = t\sigma^2$, i.e., both its mean and its variance vary over time. So a random walk with drift is also a non-stationary process.

(iii) Random Walk with Drift and Deterministic Trend: This is defined as $Y_t = \alpha + \beta t + Y_{t-1} + u_t$, where t= deterministic trend component. This is again a non-stationary process because of its time varying mean and variance.

Now every non-stationary time series has a unit root problem, i.e., each non-stationary process contain a unit root. Hence testing for a unit root can well be considered a pre condition for a series to follow random walk. However there are a number of unit root tests available. Of these, we have considered two most popular tests namely Augmented Dicky Fuller (ADF) Test and Philips-Perron (PP) Test.

(i) Augmented Dicky Fuller Test (ADF Test)

This test is conducted under the assumption that the errors (residuals) are serially correlated. This test is conducted 'augmenting' the basic three random walk equations by adding lagged values of the dependent variable Y_t to the three specifications to eliminate the serial correlation. Formally the test is based on the following equation.

$$\Delta Y_t = a_0 + \delta Y_{t-1} + a_1 T + \Sigma \beta_i \Delta Y_{t-i} + \varepsilon_t$$

Where ε_t is a white noise, T is the trend term, a_0 is an intercept (constant) and δ, β_i and a_1 are coefficients. The appropriate lag may be set based on minimizing Akaike Information Criterion (AIC), Schwarz Information Criterion (SBIC), Hannan Quinn Criterion etc.

MacKinnon's critical values are used in order to determine the significance of the test statistic. The null hypothesis of a unit root is rejected in favour of the stationary alternative in each case if the test statistic is more negative than the critical value.

(ii) Philips Perron Test (PP Test)

Phillips and Perron (1988) propose an alternative (nonparametric) method of controlling for serial correlation when testing for a unit root. The PP test estimates the non-augmented DF test equation, and modifies the t-ratio of the coefficient so that its asymptotic distribution is unaffected by serial correlation.

The test can be applied on each of the three alternative specifications using kernel-based sum-of-covariances to estimate the residual spectrum at frequency zero. Finally MacKinnon's critical values are used in order to determine the significance of the test statistic associated.

Variance Ratio Test

The Variance Ratio Test, proposed by *Lo and MacKinlay (1988)*, is demonstrated to be more reliable and as powerful as or more powerful than the Unit Root Test *(Lo and MacKinlay, 1988)*. The test is based on the assumption that the variance of increments in the random walk series is linear in the sample interval. In other words, if $\{Yt\} = (Y_0, Y_1, Y_2, \ldots, Y_T)$ is a random walk, then $\Delta Y_t = \mu + \varepsilon_t$ where μ is an arbitrary drift parameter.

According to Variance Ratio Test, if a series follows a random walk process, the variance of its q-differences would be q times the variance of its first differences.

i.e. $\mathrm{Var}(Y_t - Y_{t-q}) = q\mathrm{Var}(Y_t - Y_{t-1})$ where q is any positive integer.

The variance ratio, VR (q), is then determined as follows:

$$\mathrm{VR}(q) = \frac{\frac{1}{q}\mathrm{Var}(Y_t - Y_{t-q})}{\mathrm{Var}(Y_t - Y_{t-q})} = \hat{\sigma}^2(q) / \hat{\sigma}^2(1)$$

Lo and MacKinlay (1988) formulate two test statistics for the random walk properties that are applicable under different sets of null hypothesis assumptions about the error term.

First, Lo and MacKinlay (1988) make the strong assumption that ε_t are i.i.d. Gaussian with variance σ^2 (though the normality assumption is not strictly necessary). Lo and MacKinlay (1988) term this the homoskedastic random walk hypothesis, though others refer to this as the *i.i.d.* null.

Alternately, Lo and MacKinlay outline a heteroskedastic random walk hypothesis where they weaken the *i.i.d.* assumption and allow for fairly general forms of conditional heteroskedasticity and dependence. This hypothesis is sometimes termed the martingale null, since it offers a set of sufficient (but not necessary), conditions for ε_t to be a martingale difference sequence (*m.d.s.*).

They define estimators for the mean of first difference and the scaled variance of the q-th difference as-

$$\hat{\mu} = \frac{1}{T}\sum_{t=1}^{T}(Y_t - Y_{t-1})$$

$$\hat{\delta}^2(q) = \frac{1}{T_q}\sum_{t=1}^{T}(Y_t - Y_{t-q} - q\hat{\mu})^2$$

Lo and MacKinlay (1988) show that the variance ratio *z*-statistic is -

$$Z(q) = \frac{VR(q) - 1}{[\emptyset(q)]^{\frac{1}{2}}} \sim N(0,1)$$

$$Z^*(q) = \frac{VR(q) - 1}{[\emptyset^*(q)]^{\frac{1}{2}}} \sim N(0,1)$$

Where Z(q) is the test statistic under homoscedastic increment assumption and Z*(q) is the test statistic under heteroscedastic increment assumption.

Here $\phi\,(q)$ and $\phi^*\,(q)$ are defined as -

$$\emptyset(q) = \frac{2(2q-1)(q-1)}{3qT}$$

$$\emptyset^*(q) = \sum_{j=1}^{q-1} \left[\frac{2(q-j)}{q}\right]^2 \hat{\delta}\,(j)$$

Where $\hat{\delta}\,(j)$ is defined as -

$$\hat{\delta}\,(j) = \left\{\sum_{t=j+1}^{T} (y_{t-j} - \hat{\mu})^2 (y_t - \hat{\mu})^2\right\} / \{\sum_{t=j+1}^{T} (y_{t-j} - \hat{\mu})^2\}^2$$

Now if the test statistics are found to be statistically significant it will indicate that the return series do not follow random walk.

8. Data Analysis and Findings

Descriptive Statistics

For the purpose of analysis the study has employed E-views 7 and SPSS 11.5. The descriptive statistics of return series for indices have been reported in Table 1 below. The results relating to descriptive statistic show that all the four BSE Indices are negatively skewed with very low mean and variance suggesting lower expected returns and risk. The measure of kurtosis (more than 3 in all cases) suggests that the daily index return series in BSE have fatter tails than the normal distribution over the period. This is termed as Lepto-kurtosis, or simply ‘fat tails’. Jarque-Bera (JB) statistic with significant p value indicates that the return series are not normal.

Table-1: Descriptive Statistics for the Indices under Study

Indices	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis	Jarque-Bera
BSE30	2483	-0.11604	0.159900	0.000581	0.015645	-0.08819	11.13530	6850.421**
BSE100	2483	-0.11689	0.154902	0.000577	0.015581	-0.10542	11.13168	6845.705**
BSE200	2483	-0.11345	0.151082	0.000559	0.015334	-0.17289	11.14690	6979.111**
BSE500	2483	-0.11096	0.146179	0.000555	0.015071	-0.26738	11.11535	6843.243**

Note: ** Significant at 1% level.

Results of Tests Applied

Serial Correlation Test Results

Serial Correlation test has been applied on all the four selected index return series under BSE up to 16 lags. The findings are shown under Table 2. The results reveal that the serial correlation coefficients at lag 1 are significant at 1% level for all four indices. The same are also significant at some higher lags (8 and 14). Existence of such significant correlation clearly indicates that the return series under study do not exhibit random behaviour.

Table-2: Results of Serial Correlation Test and Ljung–Box (*Q*) Statistic

		SENSEX			BSE100			BSE200			BSE500	
Lag	AC	Q-Stat	Prob	AC	Q-Stat	Prob	AC	Q-Stat	Prob	AC	Q-Stat	Prob
1	0.074**	13.714	0**	0.09**	20.124	0**	0.099**	24.585	0**	0.111**	30.736	0**
2	-0.032	16.334	0**	-0.015	20.667	0**	-0.006	24.673	0**	0.002	30.748	0**
3	-0.022	17.569	0.001**	-0.009	20.878	0**	-0.003	24.689	0**	0.008	30.912	0**
4	-0.03	19.882	0.001**	-0.031	23.258	0**	-0.03	26.901	0**	-0.026	32.531	0**
5	-0.018	20.682	0.001**	-0.015	23.846	0**	-0.014	27.375	0**	-0.011	32.839	0**
6	-0.032	23.253	0.001**	-0.029	25.936	0**	-0.027	29.256	0**	-0.025	34.374	0**
7	0.015	23.778	0.001**	0.022	27.132	0**	0.026	30.889	0**	0.029	36.502	0**
8	0.058**	32.151	0**	0.058**	35.471	0**	0.057**	39.065	0**	0.057**	44.739	0**
9	0.02	33.118	0**	0.028	37.419	0**	0.029	41.192	0**	0.031	47.145	0**
10	0.011	33.445	0**	0.013	37.82	0**	0.014	41.707	0**	0.016	47.801	0**
11	-0.009	33.632	0**	-0.013	38.222	0**	-0.013	42.139	0**	-0.011	48.111	0**
12	0.006	33.71	0.001**	0.004	38.266	0**	0.006	42.239	0**	0.008	48.271	0**
13	0.025	35.222	0.001**	0.028	40.197	0**	0.03	44.427	0**	0.031	50.7	0**
14	0.046*	40.444	0**	0.054**	47.498	0**	0.056**	52.295	0**	0.06**	59.608	0**
15	0.006	40.536	0**	0.012	47.86	0**	0.014	52.785	0**	0.015	60.161	0**
16	0.005	40.603	0.001**	0.011	48.143	0**	0.014	53.255	0**	0.016	60.801	0**

Note: * Significant at 5% level and ** Significant at 1% level

Ljung–Box (Q) Statistic Test Results

The results of Q statistic have also been reported in Table 2. The findings suggest that the Q statistic is significant at 1% level for all the lags for each of the indices under study. This is a clear indication that all the index return series have failed to exhibit any random movement.

Run Test Results

The descriptive statistics of the selected index returns in the study shows that the return series have significant Jarque-Berra statistics thereby clearly indicating that they do not follow normal distribution. Hence use of a non parametric run test becomes more meaningful. Thus Run Test has been used as a complementary test to the serial correlation test. Both median values and Zero value have been used as the cut-off point. The results of Run Test have been incorporated under Table 3 as follows-

Table-3: Results of Run Test

		K= Median		K = 0		
Indices	**No. of Runs**	**Z value**	**p value**	**No. of Runs**	**Z value**	**p value**
BSE30	1157	-3.432	0**	1147	-3.542	0**
BSE100	1147	-3.834	0**	1103	-5.098	0**
BSE200	1241	-4.476	0**	1094	-5.384	0**
BSE500	1115	-5.118	0**	1092	-5.432	0**

Note: ** Significant at 1% level, K = Cut off point

Analysis shows that returns of all the four indices are significant at 1% level and hence are not random at all.

Unit Root Test Results

(i) ADF Test Results: The study performs ADF Test considering all the three forms of random walk, i.e., random walk without intercept (or drift), random walk with intercept and random walk with intercept and deterministic trend on all the four BSE index return series under study. Optimal lag length is determined by the Schwarz Information Criterion (SBC) and MacKinnon's critical values are used in order to determine the significance of the test statistic. The null hypothesis of a unit root has been rejected in favour of the stationary alternative in each case if the test statistic is more negative than the critical value.

The results of Augmented Dickey-Fuller test of random walk model has been presented in Table 4 below. The ADF test result reveals that the test statistic is more negative than the critical value for each of the four indices of BSE. Hence the null hypothesis of unit root (non stationary) of the index returns of BSE is convincingly rejected, suggesting that the BSE does not show characteristics of random walk and as such is not efficient in the weak form.

Table-4: Results of Augmented Dicky-Fuller Test (ADF Test)

Indices	**Wiithout Intercept**	**With Intercept**	**With intercept & trend**
BSE30	-46.17849**	-46.22848**	-46.22671**
BSE100	-45.45553**	-45.50354**	-45.49969**
BSE200	-45.02542**	-45.07091**	-45.06480**
BSE500	-44.49320**	-44.53856**	-44.53272**
Test Critical Values			
1% level	-2.565894	-3.432791	-3.961742
5% level	-1.94051	-2.862504	-3.411618
10% level	-1.616614	-2.567328	-3.127680

Note: ** Significant at 1% level.

(ii) Phillips-Perron (PP) Test Results

This study has performed PP test as a confirmatory data analysis. PP test has been performed on all the BSE index return series under study. Optimal bandwidth is determined by the Newey-West Criterion using Bartlett kernel and MacKinnon's one sided p values are used in order to determine the significance of the test statistic. Finally, the null hypothesis of a unit root has been rejected in favour of the stationary alternative in each case if the test statistic is more negative than the critical value.

The results of Philips-Perron (1988) test of random walk model has been presented in Table 5. The PP test results reveal that the test statistic is more negative than the critical value for all the four indices of BSE. Hence, the results strongly reject the null hypothesis of unit root (non stationary) of index returns of BSE thereby suggesting that BSE index returns do not show any characteristics of random walk.

Table-5: Results of Philips-Perron Test (PP Test)

Indices	Without Intercept	With Intercept	With intercept & trend
BSE30	-46.07181**	-46.16583**	-46.19295**
BSE100	-45.33234**	-45.36751**	-45.36277**
BSE200	-44.96365**	-44.96703**	-44.97413**
BSE500	-44.52292**	-44.54336**	-44.53629**
Test Critical Values			
1% level	-2.565894	-3.432791	-3.961742
5% level	-1.94051	-2.862504	-3.411618
10% level	-1.616614	-2.567328	-3.127680

Note: ** Significant at 1% level.

Variance Ratio Test Results

The study performs Variance Ratio Test for both the assumptions of homoscedastic and heteroscedastic increments. Moreover, the variance ratio is calculated for intervals (q) of 2, 4, 8 and 16. For each interval, we report, the estimate of the variance ratio, VR (q), and the test statistics for the null hypotheses of homoscedastic $\{Z(q)\}$ and heteroscedastic, $\{Z^*(q)\}$ increments' random walks. The results have been reported in Table 6 below.

Empirical evidences obtained from the variance ratio test indicate that the random walk hypothesis under the homoscedastic increment assumption is rejected at 1%, 5% or 10% level for all the four BSE index return series (except for m=8 and m=16 under SENSEX and for m=8 under BSE 100) as the Z statistics of variance ratios are significantly different from one.

Similarly the empirical findings also reveal that the null hypothesis of random walks under the assumption of heteroscedastic increments is also rejected for all the index returns for m=2 and also for some other intervals (except m=8 and m=16 under SENSEX and BSE 100) with Z statistics of variance ratios being significantly different from one. The exception may be due to the fact that those indices offer better liquidity. Thus successive returns have serial dependence which makes the series a non random walk.

Table-6: Results of Variance Ratio Test

Indices	**Variance Ratio Z(q) and Z*(q)**	**m=2**	**m=4**	**m=8**	**m=16**
BSE 30 (SENSEX)	Variance Ratio	1.075137	1.070130	1.001954	1.063383
	Z(q)	3.744060***	1.66721*	0.032922	0.717527
	Z*(q)	2.405004**	1.86792*	0.020100	0.436927
BSE 100	Variance Ratio	1.090850	1.118044	1.077736	1.170716
	Z(q)	4.527014***	3.144114***	1.309498	1.93259*
	Z*(q)	2.755678***	1.88874*	0.783149	1.173663
BSE 200	Variance Ratio	1.100326	1.14448	1.120174	1.229239
	Z(q)	4.999232***	3.847377***	2.024393**	2.595110***
	Z*(q)	2.970795***	2.265121**	1.196234	1.569855***
BSE 500	Variance Ratio	1.112085	1.175594	1.175199	1.308578
	Z(q)	5.581587***	4.676958***	2.951311***	3.493273***
	Z*(q)	3.223435***	2.689728***	1.71862*	2.098758**

Note: * Significant at 10% level, **Significant at 5% level, *** Significant at 1% level

9. Concluding Observations

The present study has used both the traditional as well as advanced test methods to check the validity of RWH in Indian stock market with a special reference to Bombay Stock Exchange. The results of serial correlation coefficient appear to be inconclusive because serial correlations are found to be significant for only a few cases. Moreover rejection of normality assumption due to significant J-B statistic further deters the validity of the test. However, under run test all the four index returns show significant departure from the random walk assumption. Ljung-Box test also confirms similar characteristics of return series. In addition, both ADF and PP unit root tests convincingly reject the non-stationary assumption against the stationary alternative. Finally Variance Ratio test which is considered to be more powerful than unit root tests also confirms that the index return series hardly exhibit any 'random walk'.

Based on all the above findings it may thus be concluded that BSE and consequently the Indian stock market still do not satisfy the Random Walk Hypothesis. Hence, as a natural consequence, Indian stock market is still not efficient in the weak form.

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Diversification in the Rural Employment Structure in West Bengal during the Post Reform Period

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Abstract: The present paper is prepared with the objective of examining the trends of the nature of diversification of rural workforce structure in the state of West Bengal on the basis of NSSO and Census data. An attempt has been made to find out the inter-district and gender disparities in this regard across the districts of West Bengal during the post reform period. It finds that the state of West Bengal and its districts have experienced a sharp increase in the rural non-farm employment with the rise of the informal non-farm sectors like trade, construction, hotelling , manufacturing, transport etc. during the period of reform. The major explanatory factors behind this process of diversification of rural workforce in the state of West Bengal seem to be the economic distress, agricultural growth, development of infrastructure, implementation of various employment generating programmes and the land reform measures taken by the Government.

Key-words: Rural workforce, economic reform, farm and non-farm activities, feminization, diversification.

1. Introduction

It is well known that Indian economy has witnessed a series of economic reforms pertaining to all major sectors of economy viz. agriculture, industry, trade, construction and so on since 1991. This seems to have produced a remarkable impact on the employment structure in both rural and urban sectors of all the states of India during the post reform period. From the various reports of National Sample Survey Organisation (NSSO) it has been found that a large proportion of rural workforce has shifted from farming activities and engaged themselves in various non-farm activities of different industrial categories viz. manufacturing, mining and quarrying, electricity, gas and water, construction in secondary sector, and some have shifted themselves to tertiary sector also which includes trade, hotel and restaurant, transport and storage, service and others. The major reasons behind this process of diversification of rural workforce structure have been found to be the development of infrastructure, economic distress, growth in agriculture, increase in literacy rate and so on. *(Basu & Kasyap 1992,Chandrasekhar*

1993, Ghosal 2002, Sundaram 2001a, 2001b, Sen 1996, Visaria & Basant 1994, Visaria & Minhas 1991,Unni 1994). Most of the earlier studies, however, highlight the tremendous fall in the rural land-man ratio due to demographic pressure, the fall in the productivity of agriculture and the desparate migration, rigorous implementation of redistributive land reform policies, etc. *(Ghosal 2005, Gazdar & Sengupta 1996; Leiten 1992,1996; Ghatak & Ghatak 2002 etc)* as the main explanatory factors behind the rapid transformation of employment structure during the post reform period. Interestingly, all these studies are dated.

An important study in this respect has been the study undertaken by *C.P Chandrasekhar* (*1993*), on the transformation in the nature and pattern of rural workforce structure and its dynamism in West Bengal, based on primary and secondary data. However, this study does not shed any light on the transformation process during the current millennium. Most of the other studies cited above have also suffered from the same limitation. Another study which has concentrated on the nature of changes in the employment structure across the districts of West Bengal is the study of *R.K Ghosal* (*2005*). However, this study is also a dated one and it covers the period upto 2001.

So, all these studies could not capture the current scenario of the rural workforce structure since economic reform. Moreover, very few have focused on the district level analysis. So, our study tries to examine the nature and pattern of diversification in the rural occupational structure in West Bengal and its districts so as to find out the trajectories behind the process of this transformation during the post reform period.

This study is based on secondary data collected from different reports of surveys of NSSO on employment-unemployment situations and different reports of Censuses of post reform period. This paper is structured as follows: Section II analyses the changing pattern of workforce participation and the nature of Employment in West Bengal. Section III focuses on the inter-district analysis of rural occupational structure. Section IV discusses the trend in feminisation of rural employment structure. Section V gives concluding observations.

2. Changing Pattern of Workforce Participation and the nature of Employment in West Bengal

In this Section we proceed to analyse the changing pattern of workforce participation in rural Bengal and its nature. In rural West Bengal the livelihood pattern is changing nowadays, where agriculture is becoming unprofitable and hence it is no longer the main source of living. It has been found that a large proportion of rural workforce has shifted from farming activities and engaged themselves in various non-farm informal activities viz. manufacturing, electricity, etc. in the secondary sectors and majority of the workers have also shifted themselves into tertiary sector which includes trade, hotel, transport, services and others. In this section we analyse the same. It is known that the best measure of the level of the employment is the Workforce Participation Rate (WFPR) and its sex wise composition. So, we have shown this WFPR in West Bengal during the post reform period in Table 1 and Table 1A.

Table 1 depicts the rural workforce participation rates which are computed on the basis of the data available from NSSO. We find from the table that the state West Bengal has registered a significant male-female gap regarding rural WFPR. In case of rural male workers of West Bengal, it is found that WFPR hovers around 54.3% to 59.4% and in case of female the same is found to hover around 8.8% to 11.2%. Surprisingly, WFPR of rural male in West Bengal has registered a negative inter-temporal growth in 2011-12 over 2009-10 accompanied by positive inter-temporal change in case of female. Again, Table-1A reveals rural WFPR on the basis of data available from census in West Bengal over last three decades. It is evident from the table that in West Bengal, rural WFPRs have registered a marginal improvement over the period from 2001 to 2011. The main factors which seem to be responsible for this pattern of change are the risk and uncertainty in agricultural operations, the creation of non-farm informal employment opportunities in the rural and sub-urban areas out of various workforce programmes of the Government, etc.

Table-1: Rural Workforce Participation Rates in West Bengal during Post Reform Period (%)

Year	Male	Female
1993-94	55.4	8.8
1999-00	54.3 (-1.99)	12.1 (37.5)
2004-05	58.1 (7)	11.1 (-8.26)
2009-10	60.9 (4.82)	9.6 (-13.51)
2011-12	59.4 (-2.46)	11.2 (16.7)

Source: Various Reports of NSSO (Figure in parenthesis are percentage point change)

Table-1A: Rural Workforce Participation Rates in West Bengal during Post Reform Period (%)

	Year		
	1991	**2001**	**2011**
Male	51.1	40.7 (-20.35)	57.2 (40.5)
Female	8.7	20.6 (136.78)	19.4 (-5.82)
Person	39.7	37.9 (-4.53)	38.7 (2.11)

Source: Various Census Data (Figures in parenthesis are percentage point change)

Now, we consider the changing pattern of workforce distribution in West Bengal as reflected in the decennial Census data. Table 2 reveals the same between 1991 and 2011.

It follows that the work participation rates have increased in rural West Bengal with respect to male, female and person. However, it is clear that the increase was due to mainly the increase in the percentage of marginal workers from 1.96 to 12.15 ,0.74 to 13.0 and 3.29 to 10.9 respectively for persons, male and female between the year 1991 and 2011. Whereas, the percentage of main workers has declined from 30.23 to 26.43 between 1991 to 2011 for rural persons, for the rural female workers, the same is found to increase marginally from 7.96 in 1991 to 8.86 in 2001, which is followed by a decline in the year 2011 to 7.90 percent. It seems that with the implementation of reform process in various sectors like trade, investment and finance, the opportunities of informal employment in both rural and urban areas have increased substantially, albeit, the nature of the employment is mainly contractual and temporary.

Table-2 : Percentage of Main and Marginal Workers by Sex in West Bengal during the Post-Reform Period

Year	Main Workers			Marginal Workers		
	Person	Male	Female	Person	Male	Female
1991	30.23	50.56	7.96	1.96	0.74	3.29
2001	28.75	47.32	8.86	8.03	6.91	9.22
2011	26.43	43.52	7.90	12.15	13.0	10.9

Source: Census of India, West Bengal, GOI

Although the work participation rate is increasing , the importance of agriculture as a source of livelihood has declined during the post reform period in West Bengal for both male and female rural workers because of agricultural operation being mostly non-profitable. So a large number of workers are now being shifted to non-farm sectors for supplementing their livelihood. Table 3 presents the sectoral distribution of workers in West Bengal during 1993-94 to 2011-12. It is clear from the table that proportion of non-farm employment has increased tremendously for both male and female. The services and manufacturing sectors have registered a conspicuous increase in case of female workers. It seems that due to non-profitability in agricultural operation, there has been a distress driven tilting of female workforce to non-farm sector.

Table-3 : Distribution of Rural Workforce in West Bengal by Industrial Category during the Post Reform Period (in percentage)

	Year	West Bengal	
Category		Male	Female
Agriculture	1993-94	64.7	58.9
	1999-2000	66.4	54.1
	2004-05	63.9	58.8
	2009-10	59.4	42.4
	2011-12	56.8	41.6
Manufacturing	1993-94	11.7	30.0
	1999-2000	10.9	36.1
	2004-05	8.9	28.9
	2009-10	12.0	37.3
	2011-12	12.3	42.2
Trade & Hotelling	1993-94	9.0	2.7
	1999-2000	10.2	2.8
	2004-05	11.4	3.4
	2009-10	10.5	4.6
	2011-12	8.9	2.8
Services	1993-94	7.5	6.3
	1999-2000	5.0	6.7
	2004-05	5.9	8.3
	2009-10	5.5	13.0
	2011-12	6.7	10.2
Total Non-farm	1993-94	35.3	41.1
	1999-2000	33.6	45.9
	2004-05	36.1	41.2
	2009-10	40.6	57.6
	2011-12	43.2	58.4

Source: Various Reports of NSSO

Again, Table-4 depicts the overall trends in farm and non-farm employment in the state of West Bengal. It is clear from the table that majority of our workforce is dependent on the farm sector for their livelihood. About 65% of the male workers in 1993-94 were employed in farm sector and we find a precipitous fall in the rate. In the year 2011-12 also about 56.4% of the male workers in West Bengal is employed in farm sector. In case of female workers, however, majority are in non-farm sector in the year 2011-12, though in the year 1993-94, the situation was reverse.

Table-4: Farm and Non-farm Employment during the Post Reform Period

	Year	**Farm**		**Non-Farm**	
		Male	**Female**	**Male**	**Female**
West Bengal	**1993-94**	64.7	58.9	35.3	41.1
	1999-00	66.4	54.1	33.6	45.9
	2004-05	63.9	58.8	36.1	41.2
	2011-12	56.8	41.7	43.2	58.3

Source: Various Reports of NSSO

3. Inter-district Analysis of Rural Occupational Structure

This Section focuses on the change in the rural occupational structure in the state. The Table-5 gives an overview of the participation in work by male and female workers on the basis of the secondary data available through the Censuses of India and West Bengal and its variation across the districts. The table reveals a wide inter-district variation in the WFPR for male and female workers at the inter-temporal level i.e. in the years between 1991, 2001 and 2011. The table clearly brings out the following facts –

First, the table reveals that the male WFPR has increased tremendously from 1991 to 2011. All the districts of West Bengal except Darjeeling, Purulia, Malda , Murshidabad and Jalpaiguri surpass the state level average (i.e. 57.2%) in 2011. In 1991, except Nadia , Medinipur, Jalpaiguri, Purulia and Darjeeling all the districts lie above the state level average figure (i.e. 51.1%). It indicates the increasing trend of male WFPR in the state during the post reform period. Second, the rural WFPR for female in the state has also shown a rising trend in the post reform period. In all the districts there has been a sharp increase in the female WFPR in the period of reform. Third, the WFPRs for male and female do not show any uniform pattern of changes and the state has experienced an improvement in rural employment situation in varying degrees. Finally, the inter-district variation in the rural employment measured in terms of coefficient of variation (C.V) over the post reform period is found to be low for male and high for female workforce.

Thus, it may be concluded that there has been an improvement in rural employment situation during post reform period in most of the districts in West Bengal and it is seemed to be due to implementation of various poverty alleviation and employment generation programmes and different developmental strategies of the Government and rapid expansion of Self Help Groups (SHGs), growth of agriculture and institutional reforms and so on.

Table-5 : Rural Workforce Participation Rates of Male and Female Workers in West Bengal and its Districts

Districts	1991		2001		2011	
	male	female	male	female	Male	female
Cooch Bihar	53.8	6.1	55.2	23.1	58.4	21.4
Jalpaiguri	33.1	30.7	52.4	26.0	54.1	25.1
Darjeeling	46.3	23.9	39.0	25.3	50.3	26.0
West Dinajpur	75.0	33.2	42.8	23.5	—	—
Malda	50.8	11.8	52.8	29.5	53.0	23.7
Murshidabad	—	7.0	51.4	14.4	55.3	14.2
Nadia	2.6	3.5	55.3	13.0	58.4	9.37
24 Parganas	48.5	3.2	52.8	11.9	58.9	12.7
Howrah	50.4	2.6	55.8	10.0	60.7	13.6
Hooghly	53.3	8.1	57.9	18.6	62.5	17.8
Bankura	50.9	14.7	57.1	32.3	57.3	24.3
Medinipur	8.1	—	55.1	24.2	59.0	27.5
Purulia	49.8	22	53.1	39.1	54.0	34.0
Burdwan	52.0	9.3	56.7	9.7	60.6	19.1
Birbhum	52.0	8.2	54.6	10.6	57.7	17.9
Dakshin Dinajpur	—	—	56.6	26.9	58.5	26.0
CV	**41.9**	**77.8**	**9.68**	**43.5**	**5.75**	**32.04**

Source: various reports of census, 1991, 2001, 2011

4. Trend in Feminisation of Rural Employment Structure

During the post reform period, the growth in the number of female workers in the rural West Bengal has increased. It is found that significant portion of female workers is concentrated in agriculture, manufacturing and community services as source of their livelihood. In all the four broad categories viz. cultivators, agricultural workers, household industry and other workers the rate of rural female workers participation has increased over the period between 1991 and 2011.

As is seen from Table–6 that for cultivators female workforce has increased by 13.40 percent, for agricultural workers it has increased by 72.76 percent during 1991-2001. Further, for the household industries and for other workers there have been an increase of 201.23% and 161.80% in 2001 over 1991. However the growth of female workforce is found to have decreased by 40.8 and 8.9 percent for cultivators and household industries respectively and slightly increased by 18.4 and 5.2 percentages for agricultural workers and other workers respectively between 2001 and 2011. From this table it is evident that in all the sectors the level of female employment has increased between 1991 and 2001, though the next decade depicts a mixed picture. However, one can say that the gender inequality in terms of engagement in work has been reduced with the growth in the number of female workers in the rural West Bengal.

Table-6: Growth in the no. of Female Workers in Rural West Bengal in four broad categories

Year			
	1991	**2001**	**2011**
Cultivators	869905	986430 (13.40)	584261(-40.8)
Agricultural workers	1305597	2255607(72.76)	2671217(18.4)
Household industries	349642	1053236(201.23)	959286(-8.9)
Other Workers	601428	1574488(161.80)	1656537(5.2)

Source: Various reports of Census

Table–7 presents the ranking of districts by percentage of female workers to total female population in rural West Bengal during the post reform period. From the Table it is clear that there has been an increasing tendency of feminization in West Bengal and its districts during the post reform period.

It was 11.25% in 1991 which has increased to 18.32% in 2001 and 18.08% in 2011 for West Bengal. Purulia being at the top of the ranking for 2011 (31.29), 2001 (36.21%) and 1991 (34.61%). Medinipur has got the second position in 2011 with a rise of 25.87%, which was 22.82% in 2001 and 17.50% in 1991. The other districts where rural female WFPR has increased between 1991 and 2011 are South 24 parganas, North 24 Parganas, Howrah, Hooghly, Murshidabad and so on. In Bankura, the WFPR increased from 19.21% in 1991 to 32.04% in 2001, but in 2011 it decreased to 23.62%. The districts like Malda, Dakshin Dinajpur, Uttar Dinajpur, Jalpaiguri, Birbhum have also experienced an increasing trend in the female WFPRs during the post reform period in varying degrees. Howrah being at the bottom of the ranking for both the years 1991 (3.73%) and 2001 (9.19%), though it has experienced an increase to 13.7% in 2011. On the whole almost all the districts are found to have experienced increasing trend in female WFPRs since economic reforms.

Table-7: Ranking of Districts by Percentage of Female Workers to Total Female Population in West Bengal during Post Reform Period (according to census data)

District	Year		
	2011	2001	1991
WEST BENGAL	18.08	18.32	11.25
Purulia	31.29 (1)	36.21 (1)	34.61 (1)
Bankura	23.62 (4)	32.04 (2)	19.21(3)
Malda	23.3 (5)	28.29 (3)	16.77 (5)
Dakshin Dinajpur	24.84 (3)	25.14 (4)	13.88 (7)
Uttar Dinajpur	18.9 (9)	23.84 (5)	12.48 (9)
Jalpaiguri	22.3 (7)	23.50 (6)	15.64 (6)
Medinipur	25.87 (2)	22.82 (7)	17.50 (4)
Cooch Bihar	20.67 (8)	22.22 (8)	9.21 (11)
Darjeeling	22.44 (6)	21.30 (9)	20.09 (2)
Birbhum	17.64 (10)	19.65 (10)	12.75 (8)
Murshidabad	17.38 (11)	16.37 (11)	10.33 (10)
Hooghly	16.24 (13)	16.16 (12)	8.05 (13)
Burdwan	16.48 (12)	16.03 (13)	9.01 (12)
Nadia	11.48 (17)	14.07 (14)	5.13 (16)
South 24 Parganas	15.24 (14)	11.83 (15)	6.18(14)
North 24 Parganas	12.81 (15)	11.33 (16)	5.41 (15)
Howrah	13.7 (16)	9.19 (17)	3.73 (17)

Figures in brackets are the ranks of the respective districts

The plausible explanation behind the increasing trend of feminization in rural employment structure during the post reform period may be the increase in literacy rate of women, government adopted strategies like National Literacy Mission for imparting functional literacy, economic distress, various workforce programmes of the Government, objective of supplementation of livelihood etc.

5. Concluding Observations and Policy Implementation

It is found that the rural workforce structure in West Bengal during the post reform period has been diversified from agricultural activities to informal non-agricultural activities. The percentage of main workers has been reduced in West Bengal between 1991 and 2011 with an increase in the percentage of marginal workers in West Bengal. Besides, the percentage of agricultural workers (cultivators and agricultural labourers) is found to have decreased in the post reform period with a tremendous increase in the non- agricultural workers (in household industries and others).

There has been an increase in the demand in non-farm activities like construction, transport, storage, communication, trade, hotelling , service etc. with the fall in the share of agriculture in the rural workforce in West Bengal since 1991, the period of reform. Infact, due to demographic pressure leading to fall in the land- man ratio and the economic distress the rural workforce both male and female have tilted in favour of the non-farm activities.

It has been found that there is an declining trend in inter–district variations of WFPR irrespective of sex. No uniform trend has been witnessed over the period of reform in all the districts of West Bengal. On the other hand the female WFPR has increased tremendously in rural West Bengal and its districts in the post reform period since 1991 in all the four broad industrial categories (cultivators, agricultural workers, household industries and others). The reasons behind this increasing tendency of feminization in rural employment structure may be economic distress, poverty and increase in literacy rate for women. Different rural employment generating programmes and land reform measures have been taken by the Government to eradicate poverty and generate employment since the post reform period. Thus, we can conclude that West Bengal and its districts have witnessed a rapid diversification or transformation in the rural occupational structure in the post reform period since 1991 , from the farming activities to the informal non-farm sectors. It seems that this process of diversification is due to expansion of non-farm informal activities, economic distress and supplementation livelihood for rural people in Bengal.

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From Cash to Accrual Basis of Accounting in The Directorate of State Lotteries, Government of West Bengal–A Case Study

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Abstract: Government of India, ever since the recommendation of the Twelfth Finance Commission (2004), has been actively putting its efforts to switch over to accrual basis of accounting in place of the present cash based accounting system. Government of West Bengal, too, following the introduction of Fiscal Responsibility and Budgetary Management Act, has been actively considering accrual basis of accounting as an effective tool to keep its fiscal deficit within the prescribed limit. The present study is an attempt to identify the problem areas, and also provide solution to the eventual switch over to accrual basis of accounting in the Directorate of State Lotteries, Government of West Bengal, which is predominantly a revenue generating entity. However, the Directorate, like an ordinary accounting entity, besides earning revenue, also incurs several expenses for carrying out its operations, and in this process, creates liabilities and accumulates assets that need to be captured at the originating point. The present study points to the flaws in the existing cash based accounting, and also prescribes certain solutions to these inherent problems by way of suggesting the process by which the Trial Balance of the Directorate could be prepared with reference to the Consolidated Fund of West Bengal, while retaining the features of the present Government accounting system.

Key-words: Drawing and disbursing authority, dependent branch, sole selling agent, consolidated fund.

1. Introduction

Directorate of State Lotteries, 69 Ganesh Chandra Avenue, Kolkata- 700013 is an unit under Revenue Branch of Finance Department, Government of West Bengal (GoWB). The Directorate was established in the year 1968 with an object of promoting lottery business and hence preventing illegal gambling. At present, it provides chief source of livelihood to several small lottery ticket sellers across the State whose main source of bread and butter remains this lottery . business.

Lottery draws are conducted on periodic basis. Main draws are Banga Bhumi Super (BBS), Banga Sree Super (BSS) and Banga Lakshmi (BL). While BBS and BSS are conducted once in a month, BL is conducted twice in a month. Apart from these regular draws, there are six other bumper draws viz. New Year, Holi, Naba Barsha, Rathajatra, Durga Puja and Diwali, conducted at different times during a year. The entire process of lottery draws is conducted in the light of the Lottery Regulation Rule (2010) of Government of India being revised from time to time, and also the Lottery Regulation Act (1968), Government of West Bengal.

In terms of delegated financial power, Directorate of State Lotteries (DSL) is merely a drawing and disbursing authority i.e. all its expenses are paid by Finance Department by allotting fund under Specific Head of Account. Similarly, all revenue it earns through sale of lottery tickets are deposited into Government Account. Thus in all probable cases, DSL assumes the character of a dependent branch in the books of Finance Department. As a corollary to this main financial and accounting character, it is imperative that DSL should prepare a Trial Balance and allied Finance Department Account in its books. Accordingly, the present study makes an attempt to convert existing cash basis accounting of DSL into accrual basis accounting by suggesting a procedure that will eventually supplement finalization of its accounts in the books of Finance Department and help prepare State Accounts as a whole (assuming only one activity being done by the Government). The remainder of the paper is organized as follows. Section 2 deals with the accounting events at DSL, while Section 3 deals with the present system of accounting and its anomalies. The process of conversion from cash basis to accrual basis of accounting is laid down in Section 4, and finally conclusions are drawn in Section 5.

2. Accounting Events at DSL

It may be mentioned that Directorate of State Lotteries, like several other directorates under different departments of Government of West Bengal, pays salary to its staff, allows superannuation benefits to be paid to its retiring employees, and incurs office expenses to run the office smoothly apart from making payments for undertaking its own specific activity i.e. conducting lottery business. In the process of payment of salary, DSL recovers Government dues like professional tax, dues payable by employees like income tax, co-operative loans and also initiates steps towards recovering moneys for generating Superannuation Fund like General Provident Fund (GPF), Group Insurance Scheme (GIS) etc. In doing this, DSL also creates liabilities viz. unpaid superannuation benefits (employees retiring in the current year but paid in the subsequent year), salary for the month of March, being paid in the month of April next financial year etc. Besides, charges like electricity, telephone, cost of material supplies etc. accruing at the end of current financial year, are often paid in the subsequent year. Naturally all these unpaid expenses will appear as liabilities at the end of the year and they need to be reflected in the books of DSL.

Still another financial aspect of DSL is to conduct lottery business which triggers several financial events that have an accounting element. DSL sells lottery tickets by engaging one sole selling agent viz. M/S Lottery Syndicate Private Ltd, being appointed through an agreement. Among several clauses included in the agreement, guaranteed sale of 90% of lottery tickets being allotted to the Syndicate constitutes the backbone of agreement. Unsold tickets may also be returned to DSL, the value of which is to be adjusted against value of subsequent sale of tickets. As far as practicable, direct selling i.e. sale against cash is encouraged. However, there is also a specific provision for Bank Guarantee that ensures realization of sale value of tickets in the event syndicate fails to obey its commitment for payment. The process of realization of sale value of tickets also includes adjustment of variable prizes (money value up to Rs. 5000) that are paid by syndicate. In addition to this, sale value is also adjusted for bonus payable to syndicate in favor of special ticket and super tickets that arise from contractual agreement. Claim for variable prizes normally extends up to a period of four months from the date of draw. Claim for fixed prize, is however, allowed a period of one month for settlement from the date of draw, which is to be referred to DSL directly. As these claims have different periods of settlement, it is natural that liabilities for unsettled claims at the end of the financial year are bound to accrue. Further, as syndicate takes recourse to guarantee fund to pay for the cost of lottery tickets (i.e. sale of tickets by DSL), the same fund utilized but remaining unsettled at the end of the financial year assumes the character of debtor in the books of DSL. All these financial events have meaningful accounting treatment in the books of DSL.

It has already been mentioned that the chief responsibility of DSL lies in conducting lottery business that requires maintaining an established office in terms of West Bengal Service Rule. Apart from meeting up contractual payments to employees, this entails certain allied expenses arising from conduct of lottery draws, typically commercial in nature. These expenses do not have much in common in other government office and they need to be matched against revenue earned. A few examples of these expenses are:–

i) Cost of printing of lottery tickets
ii) Cost of conducting lottery draws
iii) Cost of stationery
iv) Statutory fees payable for conducting lottery draw
v) Annual maintenance cost of draw machine
vi) Postage payable for delivery of prize winning cheques

As a matter of fact, these expenses require normal accounting treatment and their non-payment at the end of financial year requires further treatment towards creation of current liabilities. In addition to these, DSL has been paying considerable amount towards meeting up income tax obligation of prize winning tickets that needs a separate disclosure.

3. Present System of Accounting and its Anomalies

Meanwhile, Government Departmental accounts are being prepared annually on cash basis which is obligatory in nature. Among several things, these accounts highlight compliance with budgetary norms to ensure availability of fund to finance different Government Projects. In the light of same, DSL has been preparing annual accounts under cash basis system that shows total receipts and total payments depicting a surplus when total receipts exceed total payments and vice-versa. Thus for the year under consideration i.e. 2011-12, DSL reported a surplus of receipts of Rs. 8.39 crore after considering total receipts of Rs. 45.20 crore and total payments of Rs. 36.81 crore. An item wise analysis shows that cash basis accounts prepared by DSL have the following anomalies in respect of 2011-12 annual accounts.

Table-1: Anomalies in Cash Basis of Accounting at DSL

Sl. No.	Item	Accrual Accounts	Cash Basis Receipts / Payments Accounts As Maintained By DSL	Remark
1.	Sale of lottery tickets	41,51,52,500	45,20,22,238	Total receipts have been booked as income in lieu of net sales in cash basis accounts.
2.	Claim for fixed prize– i. Fixed prize ii. Bonus	 9,71,50,000 53,00,000	 20,67,05,000 49,00,000	Total payment in lieu of actual amount payable has been booked as payment on this count in cash basis account.
3.	Claim for variable prize– i. Prize component ii. Bonus iii. Unsold ticket	 6,97,71,500 7,44,67,500 1,6462,562	11,10,36,60	Besides absence of segregation of these expenses under different components, only adjustment made in lump sum has been shown in Receipts & Payments Account.
4.	Staff salary	1,36,79,562	1,48,50,961	An amount of Rs. 11,71,399 being paid towards arrear salary has been booked under current year's salary and thus overstatement follows.

Sl. No.	Item	Accrual Accounts	Cash Basis Receipts / Payments Accounts As Maintained By DSL	Remark
5.	Superannuation benefits	71,85,504	Nil	As no allotment has been received by DSL on this account, the same has not been considered in cash basis account.
6.	Printing of lottery tickets	69,31,080	61,77,080	Actual payment in lieu of payable amount has been considered in R/P A/C.
7.	Miscellaneous Payments	6,14,321	5,12,513	Same as (6) above.
8.	Advertisement and Publicity	Nil	57,54,974	Not considered in Accrual Account since it relates to other Department.
9.	Current Assets– i. Prepaid Draw Expenses ii. Outstanding Guarantee	 22,000 2,99,87,650	Nil	Cash basis accounting under DSL does not make finer distinction between expenses and expired benefits giving rise to Assets, and therefore, same is excluded from its consideration.
10.	Current liabilities– i. Staff Compensation ii. Expenses iii. Lottery Syndicate (Unsettled claim of syndicate for variable prize, bonus and fixed prizes)	 21,51,894 30,66,501 3,9655,760	Nil	It has already been mentioned that cash basis accounting does not consider accrued liabilities arising from commitment to pay but not actually paid.

Sl. No.	Item	Accrual Accounts	Cash Basis Receipts / Payments Accounts As Maintained By DSL	Remark
11.	Other disclosures– i. Employee contribution to different super-annuation fund ii. Professional Tax iii. Income Tax Payment	 40,29,200 80,159 4,25,13,761	Not Shown	Cash basis accounting does not have in built mechanism to segregate expenses in different component that shows for employees contribution, deduction of professional tax and statutory payment to third parties viz. income tax.
12.	Finance Department (Determined on the basis of opening excess of assets over liabilities and vice versa, plus all disbursement made on behalf of DSL minus all remittances made by DSL in the consolidated fund of State)	18,23,25,882	Nil	Backbone of accrual accounting lies in establishing relation among different accounting entities, including DSL, that contribute to economic activity of the principal entity i.e. State being considered. In the instant case, this vital relation seems to be absent in cash basis accounting.

Sl. No.	Item	Accrual Accounts	Cash Basis Receipts / Payments Accounts As Maintained By DSL	Remark
13.	Contingent liability for office rent payable	Actual amount is not ascertainable as on the date of closing of account i.e. 31st March, 2012, since the matter is being heard in the court of L.A Collector.	Same as Accrual Accounting	
14.	i. Administrative Charge	Nil	6,84,65,000	Not considered in Accrual Accounts since these involve transfer of fund from one head of account to another leaving no impact on consolidated fund.
	ii. Charges for lottery draw	Nil	1,78,00,000	
	iii. Transfer credit for variable prize adjustment	Nil	11,10,36,640	

Thus the above analysis reveals that in all probability, cash basis accounting is expected to report a surplus different from that of accrual basis of accounting.

4. Process of Conversion from Cash Basis to Accrual Basis

The preparation of current year's Trial Balance of any accounting entity under accrual basis cannot start unless effect of previous year's financial transactions that need to be settled in the current year, are brought into picture. This can be done by preparing an opening Balance Sheet that sums up undischarged liabilities arising from contractual commitment to payments, and also accumulated assets from which future stream of income will accrue. In a commercial enterprise, preparation of final accounts is mandatory under relevant act applicable to the enterprise. This does not pose any problem for these enterprises to continue their accounting activities year after year. However, when such a course of action is contemplated for Government sector, preparation of opening balance sheet poses problems as screening of unpaid liabilities and accumulation of opening assets have to be determined from existing set of books. Normally, Government Departments maintain elaborate records of financial transactions that are reflected in several registers. These registers, though not typically maintained in double entry format, can supplement accrual accounting with slight modification. Important among these registers are cash book (not typically maintained in branch, H.O. format), bill registers, allotment registers, cheque issue registers (both receipt and issue) etc.

Now, looking at the Opening Balance Sheet at 01.04.2011 (Annexure-I) it is seen that DSL had the following liabilities and assets at the end of financial year 31st March, 2011, excluding fixed assets.

Table-2: List of Assets and Liabilities as on 01/04/2011

Sl. No.	Particulars	Amount (Rs.)	Explanation
1.	Salary Outstanding	22,91,638	Common to all Departments/ Directorates and the same accrues due to obligatory one month lag in its payment at the end of the year.
2.	Outstanding Cost of Printing Expenses	22,94,760	May be DSL specific, still many Departments / Directorates have similar liability arising due to lag in payment.
3.	Outstanding Expenses– i. Hiring Charge of Vehicle ii. Electricity Charge iii. Stationery Cost	 51,979 4,098 9,568	Almost common to all Department / Directorates and should be determined by segregating payments in the current year but for which obligation to pay arises in the previous year.
4.	Current Liabilities arising from typical nature of operation being done by DSL– i. Fixed Prize/Bonus ii. Variable Prize/Bonus	 6,38,55,000 1,60,02,850	Specific to DSL for typical nature of operation being done by them and the process enumerated in (3) may be followed to ascertain its amount.
5.	Advance draw for lottery expenses	29,000	Normally does not have much relevance in other Directorate / Department but all advance drawals at the end of the year need to be ascertained as an asset.

Sl. No.	Particulars	Amount (Rs.)	Explanation
6.	Guarantee	2,97,69,050	Governments do not sell goods or provide service without receiving equivalent monetary benefits in advance. However, quite often Government sells goods or provides service on guarantee being provided by service users. This being in the nature of Debtors, is to be shown in the Balance Sheet.
7.	Finance Department	5,47,11,843	This is being shown on the analog that in the event lottery business is wound up, the excess of liabilities over assets shall be paid by Finance Department and DSL has, therefore, a claim against Finance Department for the same.

After preparation of opening Balance Sheet following the method enumerated above, the next step for preparation of Trial Balance may be taken up. However, even then preparation of Finance Department account is required since it is Finance Department which eventually pays for all services and goods received by DSL and receives all amounts for services being rendered by DSL. A format of Finance Department account is given in Annexure-II.

As regards payment of salary, elements of all deduction are to be excluded from the purview of payment. Similarly, as regards all other payments, element of income-tax payable is to be excluded from the purview of payment. Thus, in case of all payments net amount is to be shown in Finance Department Account. In accordance with this procedure, the Finance Department Account as on 31st March, 2012 may be drawn up as shown below.

Table-3: Finance Department Account (in the books of DSL) as on 31st March, 2012

Debit Items	Amount (Rs.)	Credit Items	Amount (Rs.)	Amount (Rs.)
To,		By,		
		Salary		
Balance b/d (from Opening Balance Sheet)	5,47,11,843	- Staff	73,85,087	
		- Officer	19,48,928	
		- Arrear	9,44,104	1,02,78,119

Debit Items	Amount (Rs.)	Credit Items	Amount (Rs.)	Amount (Rs.)
State Bank of India (Sale of Lottery Ticket)	25,47,20,598	Fixed Prize & Bonus		10,12,17,000
Miscellaneous Receipts	2,031	Payment for:		
Refund for Unpaid Salary	4,100	Superannuation Benefits	61,53,849	
		Withdrawal of GPF	25,18,655	
		Printing (Saraswati Press)	60,53,537	
		Stationery	1,14,429	
		Motor Vehicle (Hiring Charge)	1,82,973	
		Electricity	55,081	
		Telephone	34,378	
		Miscellaneous Expenses	1,08,159	
		AMC	4,050	
		Postage	5,708	
		Health Scheme	32,080	
		Computer	1,98,016	
		Draw Expenses	1,23,000	
		Purchase of Furniture	9,944	
		Cost of Memento	23,712	
				156,17,571
		By Balance c/d		1823,25,882
Total	3094,38,572	Total		3094,38,572

Thus looking at Finance Department Account, it is seen that apart from Opening Balance (Dr.) Rs. 5,47,11,843/- drawn from Opening Balance Sheet, DSL debited Finance Department for Rs. 25,47,26,729/- towards amount received from Sale of Lottery Tickets and other miscellaneous receipts, and credited Finance Department for an amount of Rs. 12,71,12,690/- for various payments, leaving a balance of Rs 18,23,25,882 to be considered in Trial Balance. These receipts and payments actually represent all transactions executed through third parties. Thus, payments like administration charges, lottery draws and transfer credit for variable prize adjustment, which involve transfer of fund from one head to another without affecting the overall balance in consolidated fund, have not been considered.

Now, preparation of Trial Balance in the books of DSL needs following considerations, based on inherent nature of operation being done by it.

1) DSL is a mere Drawing and Disbursing Authority, carrying out operations in terms of delegated authority being given to it by the Finance Department. Thus entire accounts of DSL have been prepared as a unit of Finance Department in which basic link with the State account has been established by preparing Finance Department Account in the books of DSL.
2) Only receipts and payments made through third parties indicating final inflow and outflow from consolidated fund are considered. Transactions involving transfer of fund from one head to another, having policy implications but no impact on consolidated fund, are excluded from the purview of accrual accounts.
3) Head wise booking of expenditure has been done on the basis of final debit shown by Pay and Accounts Officer, Kolkata. Committed liabilities arising on these heads have also been booked under these heads. In case of payment against these liabilities, these heads should be debited accordingly.
4) Certain transactions viz. deductions for GPF contribution, group insurance etc. from salary of the employees, in respect of which Government acts as agent or trustee, have been shown separately. Quite often, their outflows from State Exchequer have different time stipulations viz. premature withdrawal of these funds following death of the employee before superannuation, and thus separate individual account for each employee should be maintained to record intermittent drawal as well.
5) Entire accounts of DSL have been prepared on the basis of gross allotment utilized and net cash received from third parties from sale of lottery tickets etc. It may so happen that cheques issued by DSL are not presented to bank for encashment (example Rs 1,98,016/- for purchase of computer). Therefore, total debits considered in DSL book will inevitably differ from that of Finance Department (i.e. with reference to final debit in consolidated fund of the State). This will necessitate bank reconciliation in the books of Finance Department before DSL Account is made compatible for incorporation in Finance Department's books.
6) Trial Balance of DSL has been prepared, keeping in view that it will be eventually incorporated by the Finance Department to prepare the State Accounts as a whole. Thus, certain items viz. professional taxes, income tax paid etc. are shown separately which would have to be maintained by Finance Department centrally.

5. Conclusion

Efficacy of accrual basis of accounting in the context of the operation of lottery business by DSL may be judged in the light of numerous objectives it accomplishes.

1) Accrual accounting as a means of communication is best manifested when it is aligned with budgetary inputs. As budget conveys priorities, intention and commitments intended for several groups of stake holders, the same is effectively done by accrual accounting when actual information is disseminated through financial system to its intended users.

   In the instant case, it has already been pointed out that there are several stakeholders having connection with the operation of DSL. A list of such interested stakeholders (not exhaustive) and nature of financial information supplementing their needs are illustrated below:-

   a) Government of India (income tax paid)
   b) Government of West Bengal (sustainability of the operation of lottery business)
   c) Employee (salary, GPF, GIS, Retiral benefit)
   d) Lottery Syndicate (sale of lottery tickets, guarantee fund, bonus)
   e) Prize Winners (payment of fixed prizes, bonus etc.)

Thus accrual accounting, even when applied to moderately significant Government operation like that of lottery business, could serve as a useful tool for communication of information.

2) Accrual basis of accounting in the context of lottery business shows that accrual system could be implemented retaining the features of cash system and thereby facilitating eventual migration to accrual system. This is indeed of great help since transition from simple cash system to a more complex accrual system requires not only sensitization of government accountants to accrual concept but formal training in a new type of accounting system.

3) Still another goal that accrual basis accomplishes is to link the information to donor practices. DSL has been operating lottery business by securing bank guarantee from Lottery Syndicate that supplements its working capital needs. A detailed bank guarantee account has to be prepared to reflect this accounting treatment.

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Annexure-I

Opening Balance Sheet as at 01-04-2011

Office of the Directorate of State Lotteries
69, Ganesh Chandra Avenue
Kolkata-700013

Liabilities	Amount (Rs.)	Amount (Rs.)	Assets	Amount (Rs.)
Current Liabilities:			**Finance Department (Balancing Figure)**	5,47,11,843
Outstanding Salary	22,91,638			
Outstanding Printing Charges	22,94,760		**Prepaid Lottery Expenses**	29,000
Outstanding Motor Vehicles	51,979		**Guarantee**	2,97,69,050
Outstanding Electricity Charges	4,098			
Outstanding Stationery Purchase	9,568			
		46,52,043		
Current Liabilities for Payment of Fixed Prize:				
Fixed Prize	6,35,05,000			
Fixed Bonus	3,50,000			
		6,38,55,000		
Lottery Syndicate				
Variable Prize	1,38,71,600			
Variable Bonus	10,23,000			
Unsold Ticket	11,08,250			
		1,60,02,850		
		8,45,09,893		**8,45,09,893**

Annexure-II

Format of Finance Department Account (In the books of DSL)

Debit	Amount (Rs.)	Credit	Amount (Rs.)
To,		By,	
Balance b/d (if any as per opening Balance Sheet)		Balance b/d (if any as per opening Balance Sheet)	
All amount received on behalf of Finance Department and paid to Consolidated Fund - Sale Proceeds - Miscellaneous Income - Amount received for service provided		Payment for salary/ superannuation benefits (Net payment excluding all deduction)	
		Payment to Third party (excluding element of tax for material supplied, service rendered)	
		Payment for purchase of Assets: - Computer - Furniture - Others	
		G.P.F. withdrawal	
Balance c/d		Balance c/d	

Acknowledgement: Director of State Lotteries, Government of West Bengal 89, Ganesh Chandra Avenue, Kolkata-700013.

Note: Information and factual data contained in this article are meant for academic purpose only. This can in no way, be utilized for any other purposes.

Impact of Coal Ash Surrounding Thermal Power Stations: A Case Study in West Bengal

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Abstract: Coal-fired thermal power plant, which has adverse impact on environmental condition, is one of the major sources of energy. This paper attempts to make a study of the environmental as well as social impact of coal ash emitted out of the project in the neighbouring region of Kolaghat Thermal Power Station under West Bengal Power Development Corporation in India. It has depicted a general overview of the generated thermal power including its emissions in the atmosphere. This empirical study is based on the data available through personal interview to different respondents of three levels-828 project affected families, 137 families in the buffer zone beyond 5 km and 56 selected social representatives - by using stratified sampling technique. It has highlighted the general profile of respondents, pollution caused to its surrounding environment, activities initiated as curative measures as well as for infrastructural development, general welfare, etc.

Key-words: Coal ash, Project Affected Families (PAFs), Families in Buffer Zone (BZFs), Social Representatives (SRs), corporate social responsibility.

1. Introduction

Electricity is the most refined and convenient form of energy. It is an indispensable part of modern daily life and also a prime component of every economic activity like industrialisation, etc. to build up a nation. With rapid urbanization and the advent of Green Revolution, utilization of power has occupied the significant role of all utilities in the society. In view of its sky-scrapping requirement prime attention has now been thrown on generation of electrical energy. For its higher electrical efficiencies, coal fed thermal energy is well accepted all over the world, though it causes a significant amount of pollution. It may be mentioned here that most prominent power producing countries like China and the USA have also appreciated its recognition. Yet again, people all over the world are very much concerned about its environmental effects.

Burning fossil-fuel for energy generation usually results in about 37.8% of all green house gas (GHG) emissions in the atmosphere mostly in the form of carbon-dioxide (CO2) which is the prime source of global warming. During 2013, at least 42% of CO2 emissions in the world have been sourced by power plants only. As per International Energy Agency (IEA), India is the third energy-related CO2 (5.8%) emitter in 2013. Again, the radiological impact on generation of solid wastes like fly as well as bottom ash along with hot water and emission of poisonous gases are significant. It has the potential to create grave hazards. Emission of gases and dust in air, effluent and leaching of wastes from disposal places pollute and affect the plant surrounding locality. It also adversely affects the river and ecological environment, causes infertility of land and unhealthy living conditions along with terrible human health intricacy, outbursts for dislocation of inhabitants, wild including aquatic animals, etc. in the plant sites. Above all, such emissions are mainly responsible for harmful polluted atmosphere. A serious threat to the ambient environment may be caused if all these have not been disposed of properly. While equipped with the different pollution control devices in these thermal power plants, such dilemma may to some extent be avoided.

While fixing its main outlays, the Government of India has continuously advocated ample preferences since independence (1947). The installed power generation capacity has been elevated to 284303 MW on December 31, 2015 from a mere 1,362 MW in 1947 and coal fired generation has risen to 60.86% of it. To keep the process of holistic development of the state intact, the state owned electricity utilities have today not only proved their worthy position, but are also playing a very commendable role in the power sector. It is to be noted that Indian power sector has contributed nearly 10338 MW during 2011-12 by its West Bengal counterpart and about 89.07% has been shared by Thermal Power Plants (TPPs).

Considering the creditable role of power for encouraging the ever growing dynamic economy, West Bengal Power Development Corporation Limited (WBPDCL), a government of West Bengal undertaking has been incorporated in July, 1985 with an authorised share capital of Rs. 2000 crore. Primarily its objectives were tutored to run the business of generating and supplying the power. Initial power installed capacity was 2900 MW consisting one unit of 210 MW of Kolaghat Thermal Power Station (KTPS). Thereafter, considering the efficient performance in management and control, all of the thermal power plants under West Bengal State Electricity Board (WBSEB) had been handed over to it. During 2014-15, the power installed capacity of WBPDCL has reached to 3860 MW and by increasing 14.8% of previous year; its generation has recorded to 23853.39 MU whereas it was 15109 MU in 2005-06. Indian coal used in thermal power stations is basically of poor quality with high ash content and low volatile matter. Due to an assortment of reasons, the quality of coal has considerably deteriorated over the last three decades. The percentage of ash content has also increased from 30-35% to 40-45% and this has led to processing of larger quantity of ash with appreciably high resistance by the dust collector system. Notable point is that by consuming 18.0559 million ton (mt) of coal, it has produced about 7.2029 mt of fly ash.

By 2001, KTPS has enhanced its capacity by installing another five units of 210 MW each. Presently its power installed capacity has attained 1260 MW. Again during 2014-15, by using 6.1658 mt of coal, it has produced about 2.4845 mt of fly ash. It may be noted here that it has introduced 750 Mg/Nm3 of Flue Gas Conditioning System in the level of SPM at the outlet of the chimney.

The present study aspires to hedge clippers to the environmental agony stemming from KTPS in Medinipur (East) district, which is a coal-based thermal plant. An attempt has also been made, through this work, to assess the radiological impact of KTPS. It is increasingly becoming important that fly ash has a significant amount of radioactivity which, if not properly disposed, will be, and is becoming so, a serious threat to the ambient environment. The significant point is that bituminous type of coal which produces 55% - 60% ash is available in India (Mishra, 2004). Owing to the combustion of coal, it generates huge quantity of ash and is disposed-off either in dry or slurry form.

2. Literature Review

Study on this particular topic of thermal power plants is very scanty. However some related references have been briefed here.

Pandey (1983) observed that pollutant concentration in the surrounding area of thermal power plant has made the functional changes in plants and soil. Such point source of pollutants causes steady dreadful conditions of biotic and abiotic elements of ecosystem in immediate vicinity of the project. Possible hampering of soil fertility as well as elimination of deciduous plant species, trees, shrubs, herbs and grasses from the environs of thermal power plants have been cautioned. *Ishikawa (1988)* observed that rapid increase in demand of coal for the TPPs causes huge quantities of coal-ash. An inorganic fibre production technology may be developed and coal-ash has been melted in a fusing furnace and processed into fibres. *Dutta (1997)* examined the environmental and health effects due to disposal of coal-ash from thermal power plants. It leads to distraction of fertility, penetration of the fine particles deeply inside ones lungs effecting human health, etc. It has also indicated the measures taken to utilize fly-ash. The study has concentrated only on impact of fly-ash on health and surrounding atmosphere including its utilities. *Hegde et al. (1997)* carried out a study on the activities of corporate social responsibilities (CSR) which had been performed by SAIL, a public-sector company. *Mehra et al. (1998)* examined the consequence on dispersal of various toxic metal contaminated with fly-ash in Delhi region. *Dasgupta (1999)* illustrated the attempts to expose the means to surmount the problems of disposal of huge quantities of ash generated by TPPs by producing different value added products, like bricks, etc. Only most effective use of the solid waste has been observed here, ignoring its social impact. *Mandal and Sengupta (2005)* observed concerning the predictable environmental hazards associated with Kolaghat Thermal Power Station. *Goswami et al. (2006)* analyzed the distribution pattern of different weed species which have grown naturally on fly-ash pond specifically in Bandel Thermal Power Station in West Bengal. It has been observed that such species have grown comparatively higher in the zones nearer to the fly-ash soil border area and thereafter it gradually declines from that place and shifts to the centre of the same. The effect of fly-ash on green species has also been studied here. *Chinh and Gheewala (2007)* classified the effective method to assess the environmental effects of coal based TPPs. *Kumari (2009)* examined that fly-ash affected the normal respiration and photosynthetic rate including yield of crops, it has only enlightened on the implication of fly-ash on vegetation. *Jadav et al. (2010)* analyzed the impacts of the waste water stored in the underground water quality. Waste water with hazardous substances in ash pond has leached and percolated through the soil layers and reached into the groundwater which becomes vulnerable and interferes with natural conditions of water as well as affects the aquatic life. The underground water quality near the thermal power plant has only been assessed here. *Ansari et al. (2011)* advocated that the solid waste which is produced by the coal fed thermal power plants and causes threats not only for human being but also for environment may be applied for the purpose of garden soil and may be utilized in horticultural cropping. So a bulk quantity of solid waste may productively be used. *Lokeshappa and Dikshit (2011)* investigated the negative impact of industrial wastes including fly-ash in plant surrounding environs. Besides, this disposal of fly-ash and its extensive use in various construction materials have created other problems. *Dasgupta and Paul (2011)* explored the impact of coal-ash on the surrounding land of the TPPs in respect of its change in use and its degradation. Implementation of better technology and afforestation programme in surrounding area has been recommended.

An empirical study on this issue is too much essential in this present scenario. An attempt has been made to bridge the gap.

3. Research Objectives

To determine the social and environmental cost caused due to emission of fly ash from thermal power station, an attempt has been initiated through this work. The corrective measures that have been undertaken by the project authorities for the development in project affected areas (PAAs) have also been enlightened here. The study specifically traces to assess the–

a) social and environmental impact of coal-ash in power plant surrounding regions;
b) social disturbances caused due to different activities in power plant, and
c) implication of different remedial measures carried out by plant authorities.

4. Research Methodology

To study the above, one of the foremost coal based thermal power plants (TPPs) under West Bengal State Power Sector has been selected. The study is empirical and exploratory in nature. It is based upon the primary data which are collected out of personal interview to different respondents of three levels by using stratified random sampling technique surrounding the plant area of KTPS.

The power plant is treated as the centre of the study circle and some concentric circles are taken as strata depending on the pollution intensity of the area surrounding the plant. First, 828 Project Affected Families are selected randomly within 5 km radius of the plant and interviewed with structured questionnaire to collect primary data. Next, 137 families in the buffer zone beyond 5 km radius of the plant have been taken into account with similar questionnaire. Finally, the opinion of 56 selected social representatives has been taken into consideration using a special type of structured questionnaire. For secondary data, different websites, books, journals and dailies are consulted.

The SPSS package is used for statistical analysis of data. Descriptive statistical methods, correlation, testing of hypothesis, analysis of variance have been taken into consideration for data analysis. For qualitative data analysis, 5 point Likert's Summated Scale has been applied.

5. Data Analysis and Findings

The detailed analysis of the data has been outlined here from different perspectives viz. general profile of the respondents, Socio-economic status, environmental condition including effect of fly-ash, remedial measures and association of different variables with distance from TPPs. All these are presented below under several subsections.

a) Basic information about Kolaghat Thermal Power Station

Kolaghat Thermal Power Station (KTPS) is located near Mecheda Railway Station along with the main line of South Eastern Railways and at a distance of 59 km from Howrah station. It is on the west bank of River Rupnarayana and is placed in the adjunct area of Sahid Matangini Block and Kolaghat Community Development (C.D.) Block of Medinipur (East) district in West Bengal. It is one of the leading largest thermal power generating stations in India with highest daily energy generation capacity under WBPDCL. Since its inception during 6th plan period (1980-85), it has been contributing major share to the state power sector. Yet again, outburst of local people on different social and environmental aspects since the beginning of this century has enthused to select this issue.

b) Study Area

Out of thirteen and ten Gram Panchayats (G.P.) under Panskura-II (Kolaghat C.D) Block and Sahid Matangini (Tamluk-II) Block respectively, the survey has been conducted in most of its project affected villages in five and two respective G.P.s located within a distance of five kilometer from the power station. Again some villages which are situated beyond a distance of five kilometer i.e. in Buffer Zone (BZ) from the project have also been studied. Details of the studied Project Affected Families (PAFs) and persons (PAPs), Families in Buffer Zone (BZFs) and Persons (BZPs) and Social Representatives (SRs) in KTPS surrounding areas have been summarized in Table-1.

c) General Profile of Respondents

The study considers 828 PAFs within 5 km in KTPS surrounding areas comprising of 28.2%, 37.1%, 14.3%, 14.3% and 1.4% of 1 km, 2km, 3km, 4km and 5 km respectively. Whereas for 137 BZFs, it is 2.2%, 31.4%, 8.8%, 13.9%, and 43.8% of 6 km, 7 km, 8 km, 9 km, and

Table-1: Summary of Surveyed Families and Persons in KTPS Area

Name of the Blocks	Within 5 Km (PAAs)		Beyond 5 Km (BZ)		Total		SRs
	PAFs	PAPs	BZFs	BZPs	Families	Persons	
Panskura – II (Kolaghat C.D.)	605	3337	69	317	674	3654	35
Sahid Matangini (Tamluk- II)	223	1206	68	364	291	1570	21
Total	**828**	**4543**	**137**	**681**	**965**	**5224**	**56**

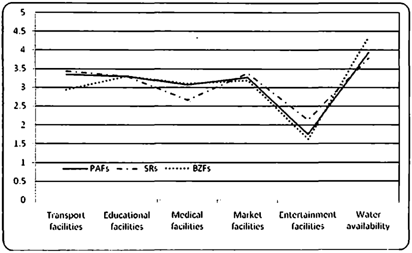
10 km respectively. Again, a sample of 56 SRs is selected within a distance of 5 km. Direction-wise distributions of the same are 16.2%, 22.8%, 33.9% and 27.1% from east, west, north and south respectively. The studied PAFs consist of 4543 PAPs in the plant's surrounding areas comprising of 52% male and 47.8% female, whereas for BZFs, it is 681 BZPs comprising of 52.6% male and 47.4% female. Most of the PAPs belong to the age of 20 to 60 years comprising of 20.6%, 16.8% and 21.9% in 20-30, 30-40 and 40-60 years respectively. Again, 72% and 95.7% of the sample are Nuclear and Hindu families respectively. The study shows that only 45.0% of sample PAPs have an education of secondary level whereas it is 38.9% for BZPs. It reveals that service (12.2%) is the most important occupation in this belt than others and almost 88% PAFs have monthly income up to Rs. 10000. So, most of them belong to very low income group.

d) Socio-Economic Status of Respondents

Most of the surveyed families live in their own houses (97%) of which 70.3% are *pacca*. With regard to holding of agricultural land by the sample PAFs, the study exposes that though it is an agricultural based rural area still, they argued that due to acquisition of their cultivable land by the project authority, only 39.4% have the same. A very few PAFs have used the modern sophisticated amenities like refrigerator (3.6%), connection of gas (32.0%), computer with internet facilities (1.9%), etc. On the contrary, most of them (90%) have common utilities like bicycle, television, etc. Hence majority of them are in meagre financial stipulation.

In respect of transport and communication facilities, the survey reveals that 33.5% PAFs and 30.4% SRs have expressed that average facilities are available in their locality, whereas about 28.9% and 48.2% respectively are fully dissatisfied with it. Again about 26.1% and 48.2% respectively have expressed their dissatisfaction about the available educational facilities in their area. Significant point is that most of them have expressed their dissatisfaction as there is no college in their zone. Unavailability of library facilities in the areas is also an important point. Majority of the PAFs (68.3%) along with SRs (8.2%) have expressed their reasonable contentment with existing medical facilities. However, it shows that about 11% PAFs have no medical facility. However, a very few selected BZFs (5.1%) are dissatisfied on the issue.

Figure-1: Assessment of Socio-Economic Status from PAFs, SRs and BZFs



Overall assessment of all respondents on social-economic status of the respondents has been depicted in Figure-1 which exhibits almost similarity among all.

e) Environmental Impact

Various emissions from thermal power plants quietly pollute its neighbouring atmosphere. Even though, way of social life in project's surrounding residents changes hurriedly. So, basing upon the responses of nearby PAFs, the implication of TPP specifically coal-ash on different environmental issues has been exemplified here.

Table-2: Coal Ash Dumped in the Locality

Coal Ash Dumped	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Yes	64.0	58.9	21.9
No	36.0	41.1	78.1
Total	**100.0**	**100.0**	**100.0**

Not less than 64.0% of PAFs and 58.9% SRs have burst out their displeasure as coal ash has been dumped all over the place in their locality. In comparison with distant place it is only 21.9%.

Table-3: Geological Change Due to Dumping Coal Ash in the Locality

Geological Change	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Uniquely	52.9	39.3	21.2
Completely	15.8	17.9	18.2
Partially	10.9	19.6	0
Very little	11.5	23.2	8.0
Not at all	8.9	0	52.6
Total	**100.0**	**100.0**	**100.0**
Mean	3.92	3.73	2.47
S.D.	1.38	1.21	1.72
Skewness	-0.95	-0.28	0.48
Kurtosis	-0.52	-1.51	-1.61

With respect to major geological alteration (Table-3) caused by coal-ash dumped in their locality, there is too much similarity between the opinions of PAFs and SRs. The table displays that 68.7% selected PAFs and also 57.2% selected SRs in KTPS surrounding areas are awfully worried on this aspect. In contrast, most of the BZFs (60.6%) have conversely replied on this issue.

Table-4: Presence of Dust in House

Presence of Dust	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Very high	55.4	60.7	1.5
High	38.9	25.0	10.2
Average	3.7	12.5	26.3
Low	1.6	1.8	12.4
Very low	0.4	0	49.6
Total	**100.0**	**100.0**	**100.0**
Mean	4.47	4.45	2.01
S.D.	0.68	0.78	1.14
Skewness	-1.5	-1.22	0.63
Kurtosis	3.38	0.59	-0.9

At least 94.3% have expressed horribly about not only high but also very high level presence of fly-ash in air as well as on houses. The descriptive statistics for PAFs furnishes the mean value as 4.47 in 5 point scale.

Table-5: Air Pollution Caused by TPP

Air Pollution	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Very high	46.4	89.3	6.6
High	48.3	7.1	3.6
Average	4.8	0	32.8
Low	0.5	3.6	10.9
Very low	0	0	46.0
Total	**100.0**	**100.0**	**100.0**
Mean	4.41	4.82	2.14
S.D.	0.61	0.61	1.23
Skewness	-0.62	-3.96	0.71
Kurtosis	0.14	16.10	-0.42

Almost every PAFs (94.7%) and SRs (96.4%) have expressed that high or very high level of air pollution has been caused by TPP owing to emission of gases and fly-ash. Table-5 also discloses that in all cases the mean value is more than 3. Conversely only 10.2% of the selected BZFs have expressed similar views.

Table-6: Impact of Air Pollution on Trees and Agricultural Land

Impact of Air Pollution	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Very high	28.9	53.6	9.5
High	17.8	28.6	10.9
Tolerable	46.4	14.3	21.2
Low	6.2	3.6	21.9
Very low	0.8	0	36.5
Total	**100.0**	**100.0**	**100.0**
Mean	3.68	4.32	2.35
S.D.	0.99	0.86	1.33
Skewness	0.08	-1.04	0.62
Kurtosis	-0.97	0.21	-0.77

As per the perception of respondents on impact of air pollution on agricultural land and trees in PAAs, it is observed from the Table-6 that the majority of PAFs (46.7%) and SRs (82.2%) have well-expressed the high or very high terrifying impact. Views differing with this have been uttered by BZFs. The descriptive statistics have also similar indication.

Table-7: Discolouring Effect on Trees and Plants

Discolouring Effect	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Highly decreasing	0	0	3.6
Decreasing	0.2	1.8	65.7
Static day by day	2.3	1.8	19.7
Increasing	3.4	5.4	10.9
Highly increasing	94.1	91.1	0
Total	**100.0**	**100.0**	**100.0**
Mean	1.09	1.14	3.62
S.D.	0.37	0.52	0.73
Skewness	4.71	4.23	-1.01
Kurtosis	23.00	19.1	0.40

Nearly each one of the PAFs has been living in the particular PAAs for a long period of time; most of them are the resident before the incorporation of the project. They have observed that intensity of green colour of trees and plants closest to the project has been disappearing very fast. At least 97.5% PAFs and 96.5% SRs have observed such phenomenon. On the contrary the largest parts of BZFs have not agreed with the same.

Table-8: Yield of Different Crops

Yield of Crops	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Not Applicable	60.6	21.4	43.1
Applicable	39.4	78.6	56.9
Total	**100.0**	**100.0**	**100.0**
Highly increasing	0	0	12.8
Increasing	0	0	67.9
Static day by day	6.1	6.8	15.4
Decreasing	21.2	72.7	3.8
Highly decreasing	72.7	20.5	0
Total (Applicable)	**100.0**	**100.0**	**100.0**
Mean	1.33	1.86	3.90
S.D.	0.59	0.51	0.66
Skewness	1.58	-0.24	-0.74
Kurtosis	1.43	0.74	1.53

The applicable section of the Table-8 includes the percentage of respondents of each class who have the cultivated land at present in the TPS surrounding areas. It reveals that almost 93.9% PAFs of applicable section and 93.2% SRs of the same have expressed their frustration that yield of crops has been considerably diminishing. In each case, the mean score remains below point 3 which also signifies the same. But reverse views have been observed for BZFs.

Table-9: Water Pollution

Water Pollution	**Study Area of KTPS**		
	PAFs (%)	**SRs (%)**	**BZFs (%)**
Very high	8.0	28.6	0.7
High	7.0	8.9	8.8
Tolerable	80.0	51.8	65.7
Low	4.0	3.6	12.4
Very low	1.1	7.1	12.4
Total	**100.0**	**100.0**	**100.0**
Mean	3.17	3.48	2.73
S.D.	0.67	1.16	0.82
Skewness	1.19	-0.17	-0.77
Kurtosis	3.35	-0.39	0.63

Table-9 shows that about 15.0% PAFs and 37.5% SRs have expressed high level of water pollution. Again, BZFs have also expressed dissimilar views.

Table-10: Quality of Available Water

Quality of Water	**Study Area of KTPS**		
	PAFs (%)	**SRs (%)**	**BZFs (%)**
Very good	2.7	0	3.6
Good	3.9	8.9	19.7
Tolerable	87.8	80.4	70.1
Bad	4.3	10.7	0.7
Very bad	1.3	0	5.8
Total	**100.0**	**100.0**	**100.0**
Mean	3.02	2.98	3.15
S.D.	0.49	0.45	0.75
Skewness	0.73	-0.09	-0.56
Kurtosis	9.31	2.40	2.79

The perception of respondents on quality of the available water has been presented in Table-10. It reveals that almost everyone in TPS surrounding regions have expressed their satisfaction about the quality of available water in their locality.

Table-11: Regeneration of Fish

Regeneration of Fish	**Study Area of KTPS**		
	PAFs (%)	**SRs (%)**	**BZFs (%)**
Not Applicable	63.2	61.4	52.6
Applicable	36.8	38.6	47.4
Total	**100.0**	**100.0**	**100.0**
Highly increasing	0	0	7.7
Increasing	0.7	6.4	20.0
Static day by day	11.8	12.6	72.3
Decreasing	14.1	32.9	0
Highly decreasing	73.4	58.1	0
Total (Applicable)	**100.0**	**100.0**	**100.0**
Mean	1.40	1.16	3.35
S.D.	0.72	0.63	0.62
Skewness	1.60	1.30	1.58
Kurtosis	1.26	1.34	1.37

The applicable row of the Table-11 points toward the percentage of respondents of studied families who have wet land at the moment in the TPS regions. It discloses that about 90.0% PAF and SRs of the above applicable line have articulated their aggravation that fish culture has been degenerating continuously. The mean score of both of them remain lower than point 3 which is also a sign of the same. However opposite opinion has been observed for BZFs.

Table-12: Impact of Pollution on Livestock

Impact on Livestock	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Not Applicable	73.6	30.4	73.7
Applicable	26.4	69.6	26.3
Total	**100.0**	**100.0**	**100.0**
Highly increasing	44.7	0	0
Increasing	19.6	25.6	0
Static day by day	34.7	43.6	38.9
Decreasing	0.9	17.9	16.7
Highly decreasing	0	12.8	44.4
Total (Applicable)	**100.0**	**100.0**	**100.0**
Mean	4.08	2.82	1.94
S.D.	0.91	0.97	0.92
Skewness	-0.24	-0.53	0.11
Kurtosis	-1.59	-0.55	-1.87

The applicable portion of Table-12 narrates the percentage of respondents who have livestock at this time. It reveals that it is applicable for almost 26.4% PAFs and 69.6% SRs. They have uttered their displeasure that effects of pollution on livestock have steadily been intensifying. It causes gradual or highly declining in number of them. In contrast BZFs are not much worried on this issue.

Table-13: Reason for Decline in Number of Livestock

Reason for Decline of Livestock	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Not Applicable	73.6	30.4	73.7
Applicable	26.4	69.6	26.3
Total	100	100	100
Pollution	93.6	100	100
Others	6.4	0	0
Total (Applicable)	**100.0**	**100.0**	**100.0**

The Table-13 expresses that nearly every one of the applicable surveyed families who have livestock together with SRs believe that pollution due to establishment of TPS is the basic cause of such declination.

Table-14: General Health Condition of Family Members

General Health	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Very good	0.7	0	2.2
Good	2.1	3.6	4.4
Average	94.9	92.9	89.1
Poor	1.9	3.6	4.4
Very poor	0.4	0	0
Total	**100.0**	**100.0**	**100.0**
Mean	3.01	3.00	3.04
S.D.	0.29	0.27	0.42
Skewness	1.17	0	2.14
Kurtosis	27.90	12.20	11.10

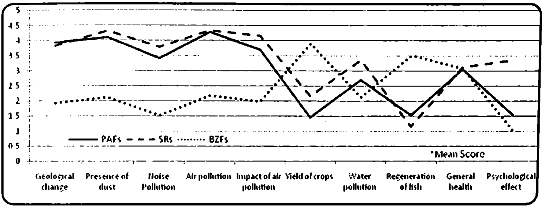
Table-14 shows that general health of most of the surveyed families is at moderate level. Merely about 2.3% PAFs are in poor and very poor level. SRs and BZFs have also viewed similarly.

Table-15: Causes of Suffering from Chronic Diseases

Causes of Suffering from Chronic Diseases	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Not suffering	47.2	37.2	57.7
Suffering	52.8	62.8	42.3
Total	**100.0**	**100.0**	**100.0**
Hereditary	2.7	2.9	6.9
Pollution	92.2	94.9	81.0
Other	5.0	2.2	12.1
Total	**100.0**	**100.0**	**100.0**

Table-15 has illustrated that at least 52.8% and 62.8% of sample PAFs and SRs respectively have been marked in the list of families; those are suffering from different types of chronic diseases. These are relatively higher than that of BZFs. Most of the respondents (almost 93%) where members in the same have been suffering from chronic diseases have a vigorous credence that pollution caused by TPS is the critical source of it.

Figure - 2: Overall Environmental Impact Assessment* from PAFs, SRs and BZFs



The above diagram (Figure-2) assesses the overall environmental impact in projects surrounding regions as per opinions of PAFs, SRs and BZFs. It has been observed that BZFs have mostly differed from that of others who have most horrible experience with these issues.

f) Environmental Awareness

Awareness of project surrounding people regarding the intensity of pollution caused by TPS particularly emission of solid waste in the air has been studied at this stage.

Table-16: Idea about Coal Ash Removed from TPP

Coal Ash Removal	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Uniquely	1.2	73.2	100
Completely	1.3	23.2	0
Partially	4.2	3.6	0
Very little	7.2	0	0
Not at all	86.0	0	0
Total	**100.0**	**100.0**	**100.0**
Mean	1.25	4.70	5.00
S.D.	0.70	0.54	0
Skewness	3.36	-1.59	0
Kurtosis	11.8	1.71	0

The above Table-16 presents that the most of the PAFs (86.0%) have confessed their lack of awareness on this aspect. The descriptive statistics indicates the same. A negligible percentage (2.5%) is conscious on this issue. But most of the SRs (96.4%) are very much concerned on this issue.

Table-17: Awareness on Recycling of Coal Ash

Awareness on Recycling	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Uniquely	0	0	0
Completely	3.5	0	0
Somewhat	3.1	7.1	0
Very little	2.2	8.9	3.6
Not at all	91.2	83.9	96.4
Total	**100.0**	**100.0**	**100.0**
Mean	1.19	1.23	1.04
S.D.	0.65	0.57	0.19
Skewness	3.48	2.40	5.00
Kurtosis	11.0	4.60	23.30

The above Table-17 shows that a negligible proportion of studied families are conscious about recycling of coal-ash.

Table-18: Awareness of Pollution Caused by TPPs

Awareness on Pollution	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Uniquely	88.5	87.5	0
Completely	3.6	7.1	2.2
Partially	5.0	3.6	1.5
Very little	1.8	1.8	12.4
Not at all	1.1	0	83.9
Total	**100.0**	**100.0**	**100.0**
Mean	4.77	4.80	1.22
S.D.	0.72	0.59	0.58
Skewness	-3.35	-3.34	3.20
Kurtosis	11.10	11.50	11.1

From the Table-18, it is clear that about 88.5% PAFs and 87.5% SRs are exclusively aware about the environmental pollution caused by TPS. Conversely, opposite picture is being described by BZFs.

Table-19: Level of Pollution over Last Five Years

Pollution Level	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Highly increasing	79.2	12.5	5.8
Increasing	11.6	64.3	11.7
Indifferent	4.7	17.9	44.5
Decreasing	4.5	5.4	38.0
Highly decreasing	0	0	0
Total	**100.0**	**100.0**	**100.0**
Mean	4.66	3.84	2.85
S.D.	0.77	0.71	0.84
Skewness	-2.34	-0.72	0.88
Kourtosis	4.58	1.03	0.33

Table-19 reveals that almost 90.8% PAFs along with 76.8% SRs have exceptionally frustrated with the intensity of pollution which, they feel, has been increasing or highly increasing in their region over last five years. On the contrary, somewhat small proportion of BZFs (17.5%) has uttered their displeasure on this issue.

g) Investigation of Social Disturbances

Relating to the immoral activities in plant surrounding area, the study has investigated the followings.

Table-20: Immoral Activities Related to Thermal Power Plant

Immoral Activities	Study Area of KTPS		
	PAFs (%)	SRs (%)	BZFs (%)
Not Applicable	80.2	60.7	89.8
Applicable	19.8	39.3	10.2
Total	**100.0**	**100.0**	**100.0**
Highly increasing	12.8	0	0
Increasing	51.8	68.2	0
Indifferent	27.4	18.2	71.4
Decreasing	3.0	4.5	7.1
Highly decreasing	4.9	9.1	21.4
Total (Applicable)	**100.0**	**100.0**	**100.0**
Mean	3.65	3.45	2.50
S.D.	0.92	0.96	0.85
Skewness	-1.02	-1.80	-1.29
Kurtosis	1.50	2.32	-0.20

Table-20 exposes that 19.8% PAFs and 39.3% SRs are great concerned about the social disturbances in their locality. According to them, establishment of TPS is its primary source. Nevertheless, among those respondents, who expressed dissatisfaction, 64.6% PAFs and 68.2% SRs respectively have affirmed that immoral activities are gradually increasing, while BZFs have opposite views.

h) Remedial Measures

Various restorative facilities which have positive effect by improving agriculture as well as rural economy in project surrounding region and are undertaken by the project authorities have been highlighted here. Implementation of such positive and appropriate measures in the places may to some extent relief the project affected communities as well as improve economical condition of the affected people.

Table-21: Rehabilitation of PAFs

Rehabilitation	**Study Area of KTPS**	
	PAFs (%)	**SRs (%)**
Not Applicable	78.0	69.6
Applicable	22.0	30.4
Total	**100.0**	**100.0**
Uniquely	0	0
Totally	0	0
Partially	5.5	0
A little	1.1	0
Not at all	93.4	100.0
Total (Applicable)	**100.0**	**100.0**
Mean	1.12	1.00
S.D.	0.47	0
Skewness	3.72	0
Kurtosis	12.20	0

Table-21 significantly depicts that almost 22.0% selected PAFs have lost their land and houses due to land acquisition by project authority. Again not less than 30.4% SRs have viewed the same for their belts. But it has also been observed that not less than 93.4% PAFs of the land / livelihood losers have not yet been rehabilitated.

Table-22: Employment of PAFs in the Project

Employment in the Project	Study Area of KTPS	
	PAFs (%)	SRs (%)
Not Applicable	78.0	69.6
Applicable	22.0	30.4
Total	**100.0**	**100.0**
Yes	29.7	0
No	70.3	100
Total (Applicable)	**100.0**	**100.0**

It has also been studied that most of the selected PAFs including land losers (70.3%) are not yet employed in the project. According to SRs, it is none.

Table-23: Infrastructural Development

Infrastructural Development	Study Area of KTPS	
	PAFs (%)	SRs (%)
Roads	65.5	35.7
Bridges	8.2	7.1
Culverts	9.1	14.3
School	24.5	41.1
Buildings	0.2	0
Libraries	0.8	0
Drainage	9.9	17.9
Drinking water	26.2	42.9
Rural electrification	85.5	76.8
Earth filling	0.4	0
Irrigation	2.3	0
Direct power supply to PAA	0	0
None	0.8	5.4

Opinion of sample PAFs as well as SRs in surveyed PAAs on the improvement of some selected infrastructural facilities has been depicted in the Table 23. It reveals that most of the respondents have expressed their satisfaction in respect of improvement of some infrastructural issues.

Table-24: General Welfare Scheme

General Welfare	Study Area of KTPS	
	PAFs (%)	SRs (%)
Tree plantation	14.1	28.6
Health camps	11.5	16.1
Sanitations	4.0	23.2
Family welfare camp	0.4	0
Adult education centre	0.8	7.1
Dispensary	0.1	0
Street light	4.8	3.6
None	74.0	48.2

Opinion of randomly selected PAFs and SRs on various general welfare activities like tree plantation, organising health camps, street light programme, etc. undertaken by the project authorities have been exposed in Table 23. Among the others, the study communicates that only 14.1% PAFs together with 28.6% SRs have contented on the adequate tree plantation programme carried out by the TPS authorities in PAAs. Only a few proportion of respondents are pleased with other welfare activities noted in the Table 24.

Table-25: Pollution Control Measures Taken by TPPs

Pollution Control Measures Taken	Study Area of KTPS	
	PAFs (%)	SRs (%)
Very quickly	0	0
Quickly	0.4	0
Slowly	2.9	7.1
Very slowly	7.2	10.7
Not at all	89.5	82.1
Total	**100.0**	**100.0**
Mean	1.14	1.25
S.D.	0.45	0.58
Skewness	3.49	2.25
Kurtosis	12.60	3.93

It is very disappointing to note from the Table 25 that around 90% of the respondents believe that the project authorities are reluctant to launch any appropriate pollution control measures.

Mostly they are utterly indifferent concerning the environment pollution caused by it. It is regrettable to note from the views of respondents that the project authority has not made any special provision on electricity facilities for the PAFs.

i) Association of Different Variables with Distance from TPPs

Table 26 exhibits the Pearson correlation coefficient along with their significance of some environmental issues with distance from the project to analyze the impact of the same.

Table-26: Association of Some Variables with Distance from TPP

Variables	r	Value	Significant
Significant geological change	r_{dv}	-.358**	With the increase in distance, geological change has been declining for all TPP surroundings.
	p	.000	
Awareness of pollution caused by TPS	r_{dv}	-.183**	Awareness among PAP has gradually been moving negatively with increasing distance.
	p	.000	
Presence of dust in house	r_{dv}	-.301**	As distance is being increasing, presence of dust on residence has been decreasing.
	p	.000	
Air pollution	r_{dv}	-.353**	Like noise pollution, air pollution has also the similar effect.
	p	.000	
Impact of air pollution on trees and agricultural land in locality	r_{dv}	-.246**	As distance has been changing, impact of air pollution on trees and agricultural land in locality has been varying negatively.
	p	.000	
Yield of different crops	r_{dv}	.065	Yield of different crops is positively correlated with distance from respective TPP.
	p	.061	
Quality of available water	r_{dv}	.033	Better quality of water is available as distance from TPS has been increasing.
	p	.349	
Greenery/plantation in locality	r_{dv}	.246**	With the increase in distance, the greenery plantation in locality has been increasing. Hence positively correlated.
	p	.000	
Idea about coal-ash removed from TPP	r_{dv}	-0.024	Idea on such removal is negatively related with change in distance
	p	0.491	

Table-26: Association of Some Variables with Distance from TPP (*Contd.*)

Variables	r	Value	Significant
Dumping of coal-ash nearer to house	r_{dv}	-0.374**	Coal-ash dumping nearer to house has reversely been changed with distance.
	p	0.000	
Level of pollution over last 5 years	r_{dv}	-.057	Opinion on effect of pollution during last 5 years is negatively correlated with the distance.
	p	.101	

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Here 'r_{dv}' denotes Pearson Correlation coefficient between distance from TPS (d) and observed variable (v) and 'p' denotes the significant (2-tailed) level.

j) Variation of Environmental Condition with Distance and Direction from Plants

To study the impact of its adjoining areas, ANNOVA has been applied to verify the variation of environmental conditions with distance from a plant as well as direction to a plant.

Table-27: Variation of Environmental Condition with Distance and Direction

KTPS	With Distance			With Direction		
	F-Value	p -value	Conclusion	F-Value	p -value	Conclusion
Environmental Condition	4.8870	.000	highly varying with distance	21.9077	.000	highly varying with direction

Table-27 shows that the overall environmental condition is highly varying in relation to the distance from KTPS (F-value = 4.887, p-value =.000). Again the table also exposes that the same has high level of variation towards different directions of KTPS (F-value = 21.9077, p-value = .000).

Again to check the Dependency of Environmental Condition with Distance and Direction of surrounding areas, Chi-square Test has been applied. The hypotheses whether different environmental issues are dependent on distance as well as on direction are tested here. The Chi-square value (= 756.227) and p value (= 0.000) signifies the high level of dependence of the attributes of environmental condition and distance from the plant. Also the same is highly dependent on the direction of the affected area to plant [Chi-square value = 456.849 and p value = 0.000].

6. Conclusion

Considering some of the social and environmental issues, this study reveals the social impacts of thermal power plants, particularly its fly-ash, in project surrounding region based on the opinion of PAFs and SRs. It discloses that the cultivated land of major PAFs has been acquired by the plant authority. Again most of them have not yet been rehabilitated, compensated or employed in the project. Inadequate living condition and food availability imply their socio-economic backwardness. Most of them belong to low income group (below Rs. 10000 per month). Majority of them have an education only up to higher secondary level (around 75% of PAPs). It presents that the general education facilities are moderate, higher education facilities are exceptionally poor as there is no college in this region. Overall, infrastructural facilities including transport and communication in PAAs are up to their satisfaction level. Most of the families are aware of coal ash which pollutes the environment dangerously and well concerned about its removal from the KTPS. A large number have boldly expressed their displeasure about coal ash which being discarded in their surrounding area. They are also much aware of its adverse environmental effects on the geological change in their areas. Presence of fly-ash from power plant in the atmosphere at its extreme level also makes the surrounding residents much concerned as well as highly dissatisfied with it. The surrounding inhabitants have strongly asserted that houses, crops and other plants in areas are fully wrapped with emitted fly-ash. Again the expression on rapid declination of greeneries and the negative impact of air pollution on agricultural land and trees in PAAs have also been observed from the study. Significant decline in yield of crops and regeneration of fish has been opined by all respondents. Most of the PAFs believe that pollution caused by TPS is the prime reason of such declination. It is observed that rate of suffering from various forms of chronic diseases by PAPs is relatively higher than that of BZPs. Most of them have a vigorous credence that pollution caused by TPS is the critical source of it. Again most of the PAFs as well as SRs are highly frustrated with the increasing intensity of pollution during last five years. They have also viewed that different social disturbance including immoral activities have been sourced by the TPS particularly its coal-ash counterpart.

However, most of the PAFs and SRs have expressed their satisfaction with respect to some infrastructural improvement but only a certain percentage of them have expressed their pleasure with different welfare activities undertaken by the project authority. It is recommended that the initiation should be taken by TPS for coal ash to implement different measures to mitigate social and environmental degradation caused by it. Again, coming forward with different CSR activities, the TPS authority may reprimand the different annihilation caused by it. It is also advocated for the proper arrangement of rehabilitation to the dispossessed people on priority basis and it should be executed eventually by consulting with the government. It should be obligatory for the project authority to implement the afforestation programme within the plant areas along with its adjoining areas. The plant authority should instigate various activities to improve the economic condition in the nearby part of TPS. The plant authority should strictly put into practice various legal provisions like compulsion for allocation of fund (2% of profit) as per CSR Rules under Companies Act, 2013, etc. to maintain a social and environmental balance in the locality.

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An Empirical Study of Working Wives' Behaviour in Family Purchase Decision Making

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Abstract: In recent times, the issue of working wives' participation in family purchase decision-making in the family has evoked much discussion and controversy. The "feminists" are arguing that working wives are no longer lagging behind men in the family in the context of purchase decision-making. However, trivialization of such a serious issue should cause great concern to a true feminist as well as to a researcher. The present study is undertaken to understand the behaviour of working wives as consumers and their complex, dynamic and multi-dimensional decision-making process. The main objectives of this paper are to: (1) understand how the socio-economic characteristics influence the involvement of working wives in purchase decision-making, and (2) examine the role of working wives in purchase decisions regarding high involvement and low involvement products and to suggest some marketing strategies to the marketers regarding how they can influence the decision-making of working wives.

Key-words: Decision-making, influence, working wives, involvement.

1. Introduction

In the city of Kolkata the number of working wives is growing at a steady pace. This is mainly because of the development in communication system and the growth of educational opportunities provided to women. Because of this growth, the working wives now-a-days also have an increased purchasing power. The increased purchasing power of working wives is giving them the required confidence to participate in family purchase decision-making. The various problems in studying the behaviour of working wives as consumers are:

- It is difficult to understand the level of involvement of working wives in purchase decision-making and the degree of association between predictor variable i.e. involvement and socio-economic variables.
- Identification of environmental influences on behaviour of the working wives (like socio-cultural influence, culture, sub-culture, social class, social groups, family and interpersonal influences) is also difficult.
- It is difficult to establish the fact that the influence of working wife is high when the

product is high priced and technically or mechanically complex i.e. in case of high involvement products and vice versa in case of low involvement products.

- The problem is to understand whether the working wives have any kind of dominance in the stages of family purchase decisions like when to buy, how much to spend and where to buy.
- It is difficult to say who should make the decision, how the decision should be made and who should implement the decision.

By examining various dimensions uncovered in this study, marketer can develop a better understanding of working wives needs. The marketers and marketing academicians may use the findings of this study as a resource, while constructing, managing and evaluating their marketing strategies in the Indian context.

2. Review of Literature

Over the past thirty to forty years a host of studies has been carried out, mostly in the United States, aimed at developing models of consumer behavior and understanding their complex decision making process. The volume of literature that has so far developed on the theme is scanty. There are a few numbers of journals, articles and text book materials which account for the whole of the literature that currently exist in relation to this subject. Although family decision making has been a popular research topic among consumer behaviourists (*Davis 1976; Lackman & Lanasa 1993; Wolgast 1958*), but there has been a lack of work on working wives' family decision making so far.

Involvement is said to reflect the extent of personal relevance of the decision to the individual in terms of her basic values, goals and self-concept (*Engel and Blackwell, 1990*). Involvement is an internal state variable and indicates the amount of arousal, interest or drive evoked by a particular stimulus or situation (*Mitchell, 1979 and 1981*).

Rena Bartos (1989), "The working women who had been ignored by marketers, might, in fact represent an opportunity segment whose behaviour should be cultivated. She entitled Working women, "The Invisible Consumer Market".

Del I Hawkins, Roger J Best and Kenneth A Coney (2001), "Much remains to be learned about family decision making. The direct involvement of family members in each stage of the decision process represents only a small part of the picture. Taking into account the desire of other family members is also important, though seldom studied.

Davis and Rigaux (1974) explored family purchasing roles in Belgium at three decision stages (problem recognition, information search, and final decision) for 25 household decisions. Results showed that husbands became the more dominant influencer for most products as the decision stage progressed from problem recognition to information search. However, when moving from information search to final decision, the patterns of influence became more equal. Davis and Rigaux (1974) also established that family purchasing roles vary by type of product or service. Research evidence also shows that sex-typed products (e.g., cosmetics, husbands clothing, working wife's clothing) tend to fall within the realm of one spouse only. For instance in the Davis and Rigaux (1974) study, as might be expected, working wife's clothing decision was dominated by the wives. Subsequent replications of the Davis and Rigaux study in the United States (*Bonfield, 1978; Engel, Blackwell, and Miniard, 1990*) provide further evidence regarding spousal influence variations across sex-typed products.

3. Objectives of the Study

- To scrutinize the impact of demographic factors on working wives involvement in family purchase decision-making and also to determine the level of association between purchasing involvement and socio-economic characteristics.
- To examine the role of working wives in purchase decisions of high involvement and low involvement products and to suggest some marketing strategies to the marketers regarding how they can influence the purchase decision-making of working wives.

4. Research Methodology

Data Source: The current study is empirical in nature and hence primary data has been collected according to the plan of work and secondary data from the published sources. Primary data was collected through Questionnaire as per the requirement of the study in order to understand the working wives socio–economic characteristics and purchasing involvement in family purchase decision making.

Data Collection Instrument: The research instrument for collection of primary data was the questionnaire. The questionnaire was filled up by the surveyor (i.e. researcher) on the basis of the response of the respondents i.e. working wives.

Sample Size: A sample of 500 working wives has been used for testing eight hypotheses derived from a synthesis of the relevant literature.

Research Design

Sampling Elements: Families (Nuclear & Joint families)

Sampling Units: Working wives

Extent: Selected wards of Kolkata.

Sampling Technique: Non-Probability Sampling like Convenience sampling and Judgment sampling was employed as per the requirement of the study.

Kolkata presents the researcher with several unique problems. Social customs preclude access to Kolkata's families or personal interviews with Kolkata's working wives. Such difficulties render non-probability sampling and convenience data collection procedures necessary (*Tuncalp, 1988*). This study was no exception to other studies in employing a purposeful sample.

Specifically, the field procedures here were patterned after pilot survey conducted among Kolkata's working wives, and self-administered data collection procedures were employed (Verhage, Yavas, and Green, 1990).

Statistical Tools Used

For a comparative study and for a better visual understanding and better presentation, Bar Charts and tables have been used. Moreover, statistical technique Chi-square test was used to analyze the collected data.

5. Analysis of Findings

Socio-economic characteristics of working wives

The demographic profile of the 500 working wives is shown in Table 1. Six demographic predictors were included in the research design. They were: Age, Education (high school or less vs. some college or more), income, occupation, family life cycle and family organization (nuclear vs. joint). Respondents were mostly between 25 to 55 years of age and came from families with an average size of three people. On the average they had been married for 1-15 years. Seventeen percent of the respondents did not have any children; those who did, on the average, had one to two children. Twenty percent of the women surveyed had lived in the districts of Kolkata for 6 months or longer. 71.2 % of the working wives' had at least attended college, and almost 40% out of. 71.2% of the working wives held managerial, administrative, or other professional jobs. Hence, the study sample represents a mixture of an upscale and midscale urban segment of the Kolkata's working wives.

Working wives involvement in product purchase decisions

Involvement in product purchase decisions is an important concept in understanding working wives behaviour in family purchase decision-making. Involvement is not due to attitudes but to behaviours. Working wives may be involved in purchase of convenience goods, shopping goods, durable goods and non-durable goods. Purchase involvement is similar to a personality trait in the sense that it transcends individual purchase situations and is characteristic of the individual. Involvement is a state of motivation, arousal of interest and the state exist in a process. It is driven by current external variables (the situation, the product and the communication) and the past internal variables (enduring, ego and central values). Its consequences are searching, processing and decision making. In this study purchase involvement of working wives is determined on the basis of the following questions.

a) How much time and effort expended in the undertaking of specific behaviours?

b) How much time they allocated for shopping?

c) How much money was budgeted for purchase?

Upon analyzing these answers, the degree of involvement was assessed. However, involvement in this study was used in behavioural aspect which includes searching, questioning and arguing.

Table-1: Background Information of Respondents

Characteristics	No of Respondents	Percentage of Respondents
Age		
Below 30 Yrs	86	14.66
31-40 Yrs	228	47.6
41-50 Yrs	102	22.26
Over 51 Yrs	84	15.46
Nature of Family		
Nuclear Family	389	77.8
Joint Family	111	22.2
Education		
Up to High School or less	144	28.8
Some College or more	356	71.2
Occupation		
Service	466	93.2
Others	356	6.8
Monthly Income		
Less than 10,000	144	28.8
10,001-25,000	196	39.2
25,001-50,000	126	25.2
Greater than 50,000	34	6.8
Family Life Cycle		
Married with no children	98	19.46
Married with youngest Child below 6 Yrs	87	20.13
Married with children between 6-18 Yrs	234	44.93
Married with no children below 18 yrs	81	15.46

Involvement as behaviour of working wives in family purchase decision making has been used in the sense of greater searching for information, asking different questions about the new products and higher level of arguing, as part of working wives' behaviour, would indicate high involvement from a behavioural perspective. On the other hand, the lack of questioning about new product would indicate low involvement.

Association between socio-economic characteristics and involvement

The involvement of working wives in family purchase decision making fundamentally influence them as consumer. The predictor variable 'involvement of working wives' was assessed with the help of Likert type scale. The respondents were trichotomized (low, medium and high) on the basis of scores obtained by them. The findings were based on opinion of the 500 working wives and the analysis was based on chi-square analysis, Cramer's V and Contingency coefficient.

Due to presence of existing knowledge in this area the following hypotheses were proposed.

H_0: There is an absence of significant evidence that differences in age will have a significant impact on the involvement of working wives in family purchase decision making.

H_1: There is an absence of significant evidence that differences in nature of family will have a significant impact on the involvement of the working wives.

H_2: There is an absence of significant evidence that differences in education will have a significant impact on the involvement of the working wives.

H_3: There is an absence of significant evidence that differences in occupation will have a significant impact on the involvement of the working wives.

H_4: There is an absence of significant evidence that differences in monthly income will have a significant impact on the involvement of the working wives.

H_5: There is an absence of significant evidence that differences in family life cycle will have a significant impact on the involvement of the working wives

In order to test the above mentioned null hypotheses chi-square (χ^2) as a test statistic was used. The results of chi-square test are given in Table 2. Cramer's V and Contingency Coefficient shows the level of association between socio-economic variables and involvement.

Role of working wives in purchasing decisions of high involvement and low involvement products in terms of instrumental and expressive

Among numerous sub decisions reported in the literature (*Wilkie, 1975*) three of which were common to most studies (see for example, *Davis, 1976*; *Shuptrine and Samuelson, 1976*) were selected. These were: when to buy, where to buy, and how much to pay. All three sub decisions are not only appropriate for the Kolkata's environment but, in past studies, they also yielded significant spousal influence differences. Working wives family purchase decision roles for these three sub decisions across product categories were obtained by asking them to indicate whether they were made by the husband, working wife, or jointly.

Scott (1976) argues that family role influence pattern will vary depending upon the interest and involvement of family members in a particular product or service. Thus, families with the same role allocation might show some decision-making variations on the basis of perceived importance of a product or service (*Sheth, 1974*). A spouse who is more involved with a product-service will be more active in the decision process and have a greater effect on the decision

Table-2: Results of Chi-square analysis, Cramer's V, Contingency co-efficient and level of involvement

VARIABLES	χ^2 Value	Null Hypothesis Accepted/ Rejected	Cramer's V	Contingency Coefficient	Level of involvement
Age and Involvement	64.60#	Rejected	0.55	0.61	Moderate to high involvement because young and middle aged working wives show higher levels of involvement in product purchase decision in the family
Nature of Family and Involvement	3.90	Accepted	–	–	Not significant
Education and Involvement	17.90#	Rejected	0.65	0.73	Moderate to high involvement because it was found that as the education level falls the low attitude towards involvement increases and vice-versa.
Occupation and Involvement	44.79#	Rejected	0.21	0.28	Low to moderate involvement. Once the working wives got the opportunity to go outside the home and enter a favourable environment and engage themselves in various occupations they can develop a positive attitude.
Monthly Income and involvement	30.88#	Rejected	0.47	0.55	Moderate to high involvement because the percentage of low scores showed a decreasing trend with the increase in contribution in family income.
Family life cycle and involvement	104.89#	Rejected	0.66	0.74	High involvement in purchase decisions when the child is between 6-18 yrs of age.

# indicates that it is significant at both levels i.e. 5% and 1%.

outcome. Past writings show that involvement has an impact on marital power and it is a viable predictor of spousal influence in purchase decisions (*Burns and Granbois, 1980*; *Scanzoni and Szinovacs, 1980*). The existing literature collectively suggests that spousal influence increases as a function of involvement with an object or activity. Hence, the following hypotheses were advanced:

H_6: Families of Kolkata are prone to working wife dominated family purchase decision-making.

H_7: Kolkata's working wives play the dominant role in identifying the need for a product.

H_8: Kolkata's working wives exert more influence in the purchase of a sex-typed product (e.g. women's clothing) than other products.

Table-3: Distribution of family Purchase Decision Roles across six product categories as reported by Kolkata's working wives (n=500)*

Product category	Decision Maker	When to Buy?(%)	How much Spend?(%)	Where To buy?(%)
Grocery	Husband	20	37	38
	Working wife	50	26	31
	Joint	30	33	31
Furniture	Husband	23	47	34
	Working wife	23	11	19
	Joint	54	42	47
Major Appliances	Husband	34	53	49
	Working wife	30	11	15
	Joint	36	36	36
Automobile	Husband	81	82	90
	Working wife	2	1	1
	Joint	17	17	9
TV/CD or DVD Player	Husband	47	67	67
	Working wife	12	6	8
	Joint	41	27	25
Working wife's clothing	Husband	8	16	7
	Working wife	78	68	76
	Joint	14	16	17

*** Overall average percentages were: 44% by the husband, 26% by the working wife and 30% joint.**

To test H_6 that working wives dominate family purchasing decisions in Kolkata, the overall distribution of the occurrence of husband, working wife and joint decisions was examined. Results are presented in Table 3. The mean percentages across six product categories and three decision situations indicated that about 44% of the decisions were made by the husband, 26% by the working wife, and 30% jointly. The proportions for husband, working wife, and joint decisions in Table 3 were further compared using one-way analysis of variance. The three sets of proportions were significantly different ($F=3.49$, $p<.05$). Further analysis via multiple contrasts revealed that the proportion of decisions made by husbands was significantly higher than the other two. Hence, H_6 is not supported.

Results in Table 3 also provide insights into the nature of family purchasing roles across decision stages and product categories as stated by H_7 and H_8. Overall, husbands were more dominant on the question of "how much to spend" with the exception of working wives clothing. Similarly, on the question of "where to buy: husbands were dominant with the exception of furniture and working wives clothing. The working wife was dominant only on the purchase timing of groceries and their clothing. As expected, two sex-typed products emerged as being clearly dominated by one of the spouses. Husbands were dominant in all decisions related to the purchase of a car, whereas working wives dominated the decision on clothing. The little interest shown by working wives in car purchase decisions makes sense. Though the percentage of women drivers is increasing day by day but still they are not allowed driving a car in Kolkata due to conservative attitude of their husbands. Moreover, working wives pay much less attention to car commercials as compared to their husbands. Results in Table 3 partially support H_7 and H_8.

6. Conclusion

This paper examines the relationship between role structure and influence of working wives in family purchase decision-making with the changing status of their increased income, education and occupation. Based on a series of personal interviews, this study explored various components of decision-making of working wives for the purchase of durable and non-durable products. The findings suggest that working wives were the dominant influencer of the primary stage of the decision-making process in case of grocery products i.e. identifying the need for a product (When to buy).The other stages of the purchase decision-making was mainly dominated by their husbands i.e. how much to spend and where to buy. Demographic variables were associated with varying patterns of involvement of working wives. Differences were also noted between demographic factors and sources of information used prior to purchase by the working wives. Results suggest that retailers of durable and non-durable products would be benefited by profiling potential submarkets of these product.

As the young and middle aged working wives are highly interested, involved and face low conflict in family purchase decision-making due to their financial empowerment, so it can be concluded that consumption of durable and non-durable goods of these two segments (young and middle aged working wives) will obviously increase because consumption is a function of income. This is a positive indication from the point of view of the marketer because it indicates that sales will increase if these two particular segments are targeted by the marketer.

Based on the findings of the study we conclude that the working wife was found to be more influential in taking purchase decisions of low involvement/emotional products like groceries, kitchen appliances, breakfast cereal etc. which requires limited decision-making.

The study concludes that there seems to be a general trend towards more joint decision making, in spite of the fact that working wives will share more authority in family decision-making; there will be less division of labour and more companionship.

Previous research has shown that family purchasing roles vary by decision stages and product category. Results of this study again confirm these relationships. Working wives of Kolkata were not dominant on the question of "how much to spend, whereas their dominance is observed in case of the question "when to buy". Husbands exert greater influence on all the sub decisions pertaining to automobile purchase, whereas working wives dominated the sub decisions for women's clothing.

Finally, it can be concluded that with proper understanding and knowledge of the working wives behaviour, marketers can determine which specific aspects or features of the products to advertise to the working wives and which media will be the best to reach them.

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Modifications in LLP Legislation in India for Protection of Stakeholders' Interest—A Study of the Perceptions of the Professionals from Kolkata

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Abstract: A Limited Liability Partnership (LLP) is a body corporate, possessing characteristics of partnership and corporate structure and is governed by the LLP Act, 2008 in India. This organisation has been created to meet the needs of professionals who have led to its formation and evolution. But the issue is whether this limited liability of the partners will prove beneficial to the third parties dealing with an LLP. In this article, an attempt has been made to study the perceptions of the professionals on the need for certain modifications in the LLP legislation in India to protect the stakeholders' interest.

Key-words: Personal vicarious liability, liability insurance, clawback requirement, joint and several liability.

1. Introduction

A limited Liability Partnership (hereinafter referred to as LLP) is a hybrid organisational structure that has evolved to meet some of the limitations of the two most common business structures over the world, namely, the partnership form and the corporate form. The partnership form offers the benefit of internal flexibility to its partners to arrange its internal affairs but makes the partners vulnerable to the problems associated with joint and several liability. It is on account of joint and several liability that the partners may face the threat of unlimited liability in due course. On the other hand, the corporate form holds out the advantages associated with separate legal personality, perpetual succession and limited liability to its members but it is burdened by various regulatory formalities in its day to day conduct of its affairs. Hence, the presence of some inherent limitations in both these structures that have led to the evolution of hybrid entities like LLPs.

According to the Limited Liability Partnership Act, 2008 in India, an LLP is a body corporate having separate legal entity from that of its members and enjoying perpetual succession. It can be incorporated in accordance with the requirements of the Act by at least two persons (natural or artificial), intending to carry on a lawful business (http://www.mca.gov.in/LLP/pdf/LLP_Act_2008_15jan2009.pdf). The LLP form was first introduced in Texas after the fall in the real estate and energy prices in the 1980s. This fall lead to the failure of banks and savings and loans associations (S & Ls) but the amount recoverable from them was inadequate to meet the claims of the creditors. Hence, an effort was made to recover the amount from the law firms and the accounting firms who have advised those institutions. Since this move could have rendered many professionals bankrupt, an effort was made to protect the innocent partners of the firms from such bankruptcy. This initiative lead to the emergence of the LLP law in Texas (Hamilton, 1995). LLP was introduced in the Uniform Partnership Act, 1996, in the USA. In the UK, the professional group, especially the accounting professional group, raised concerns about the large amount of liability settlements by the accounting and auditing firms, inadequate coverage and scarcity of liability insurance policies and the demerits associated with joint and several liability. These were the reasons cited for their demand for the LLP legislation. It was observed that Jersey, a part of Channel Islands, was used to convince the UK government to enact the LLP legislation. Eventually, the LLP Act, 2000, was enacted in the UK.

The innovative business structure in the form of LLP was introduced in India by the enactment of the LLP Act, 2008. It is known that this Act received the President's assent on 7th January, 2009, and was, thereafter, notified in the Official Gazette. The Limited Liability Partnership Act was put into force by the Central Government on 31st March, 2009. In the state of West Bengal, the total number of LLPs registered till 30/12/2014 was 1748 (Source: http://www.mca.gov.in/DataPortal/Ministry/DataPortal/West_Bengal_LLP_1.pdf). The total number of LLP registered in India in the years 2009, 2010, 2011, 2012, 2013 and 2014, were 559, 181, 4218, 108205, 6783 and 11,616 respectively (Source: http://www.mca.gov.in).

Thus, from the above statistics, it seems plausible that despite a slow start, the incorporation of LLP in India reached its peak during the year 2012 and finally has become stable by 2014. Apparently, this organisational form is gaining momentum and popularity in India.

2. Review of Literature

In this section, an attempt has been made to briefly review, in a chronological manner, some major available works relating to LLP.

- A publication of the Alberta Law Reform Institute (1998) mentions the basic key legal concepts, highlights the different form of business entities existing in Alberta jurisdictions and in other places. It also draws the evolution of limited liability organisational forms over a period of time and debates over the issue whether the business participants, especially the professionals, should be allowed to practice in limited liability entities or not.
- Cousins, Mitchell and Sikka (2004) have stated that the major accountancy firms are insensitive to the rights of the stakeholders and pay no heed to maintain transparency of their activities and public accountability. They have depicted how major accountancy firms had influenced the drafting of the LLP Legislation in Jersey and had utilised the same to enact the LLP Bill in the United Kingdom (UK). Ultimately, the authors concluded that such limitation of the auditors' liability will lead to the concentration

of power and wealth in the hands of the few people in the society, thus affecting the society in a negative way.

- Gopalakrishnan (2004a) has focused on the need to bring a legal reform in the form of limited partnership to help small-scale industries (SSIs) and small service enterprises access much needed capital. He has stated that the professionals like accountants and lawyers have been pressing for the introduction of LLPs to achieve a level-playing field with their counterparts in the developed countries. They are also demanding legal amendments to enable professionals from different disciplines to form a single outfit to render services from a single window.
- Again, Gopalakrishnan (2004b) has underscored the urgent need for extending the option of LLP to meet the investment need of a small entrepreneur without being substantially out of sync with the business culture and environment that he/she has been accustomed to for decades.

3. Research Gap

After having a brief review of literature, it is observed that this unique organisational form has been designed primarily to meet the needs of the professionals like Chartered Accountants (CAs), Lawyers, etc. The existence of joint and several liability of the partnership firms and the risk of unlimited liability were the two most inhibiting factors that restricted the growth of this service industry.

If limited liability is good for owners of business, the issue is whether it is good for accounting professionals. The possible reasons for the demand of LLP worldwide are due to the magnitude of malpractice claims, inadequacy and expensive nature of liability insurance coverage and structure of the accounting industry. Since the accounting professionals are likely to incur some liabilities towards non-clients, it is required to evaluate whether LLP form would be detrimental to the interest of non-clients. Though civil liability rules and market discipline act as a motivator, the argument is whether LLP form would be affecting their quality of service. LLP form may cast more impact on the compensation issue in large-sized firms than small-sized ones (Alberta Law Reform Institute, 1998).

In this research work, an attempt has been made to study and evaluate the perceptions of the professionals in Kolkata regarding the viability of this organisational form in India. Professionals here would include the members of the Institute of Chartered Accountants of India (ICAI) and the members of the Institute of Company Secretaries of India (ICSI). An attempt has been made to assess their opinion with regard to the modifications required in the LLP legislation in India for protection of the stakeholders' interest.

4. Objectives of the Study

This study is aimed to cover selected professionals with the specific objectives stated below.

1. To assess whether *qualification, occupation, gender and income levels* of the respondents cast a significant impact on each of the variables constituting modifications in LLP legislation in India for protection of stakeholders' interest;
2. To confirm the dimensionality of the data set and to identify the most important and the least important variable under modifications in LLP legislation in India for protection of stakeholders' interest.

5. Research Methodology

The present research is empirical and exploratory in nature. Primary and secondary data have been used in this study. Primary data have been collected by administering a structured questionnaire. The questionnaire has been prepared by studying the existing literature in hand. Pilot study has been done before final preparation of the questionnaire. The questionnaire has been distributed among the professional groups and the respondents were selected through convenience sampling method. Secondary data have been collected from various sources like journals, books, websites, etc.

Sample

The sources of selection are the lists of members in Kolkata of the two institutes. The sample of the study has been taken from the list of members of the ICAI as on 1/4/2011 and the list of members of the ICSI as on 31/03/2012. In spite of best efforts, the list of members of the ICAI as on 1/4/2012 was not available. However, it is expected that this will not distort the representativeness of the sample.

Survey Instrument

The survey instrument is segregated into two parts. The first part deals with the demographical details of the respondents namely the name, contact details, age, qualification, occupation, gender and income level. The second part contains three point likert scale statements on modifications in LLP legislation in India for protection of the stakeholders' interest. To evaluate the reliability of the instrument, the test of Cronbach's á (Alpha) has been performed on all three point Likert-scale statements in the second section of the questionnaire.

Survey Procedure

With an objective to make the study an intensive one, the questionnaire has been distributed physically as well as through e-mails to 1% of the population. In spite of the best efforts, most of the professionals were not keen to respond. This may be due to the novelty of the underlying idea of the questionnaire, difficulty of the matter, lack of time on their part, etc. The study has been finally done on the basis of 86 completely filled in questionnaire finally received. The sample contains around 0.6% of the population of members of The Institute of Chartered Accountants of India (68 Chartered Accountants (CAs) in number) and around 0.7% of the population of members of Institute of Company Secretaries of India (18 Company Secretaries

(CS) in number). Among the CSs included in the sample, 10 are both CA and CS. Among the CSs included in the sample, 1 is CA, CS and CMA. Among the CAs included in the sample, 3 are both CA and CMA. Both practising and non-practising members are included in the sample. Employee-professionals in CA firms are considered as practising members.

Data Analysis

The data have been studied with the help of the statistical package namely SPSS version 20 bearing in mind the objectives of the study. The demographical composition of the respondents is derived in the study. Thereafter, Cronbach's á (Alpha) has been computed on all the statements in the second section of the questionnaire to ascertain the overall consistency of the data collected. Subsequent to this, Chi-square test or Fisher's Exact test has been applied for the variables present in the questionnaire *vis-a-vis* the qualification, occupation, gender and income level of the respondents. Finally, Factor Analysis has been performed on all the variables constituting modifications in the LLP legislation in India for protection of the stakeholders' interest to check whether they belong to one single dimension or not and to identify the most important variable under this dimension.

6. Empirical Analysis

First Part:

Demographic Profile of the Respondents

Table-1: Professional Qualification-wise Distribution of the Respondents

	Frequency	Percent	Cumulative Percent
CA	68	79.1	79.1
CS	18	20.9	100.0
Total	86	100.0	

Table-2: Age-wise Distribution of the Respondents

Age-group	Frequency	Percent
Below 30	46	54
31-40	10	12
41-50	15	17
51-60	14	16
Above 60	1	1
Total	86	100

Majority of the respondents fall in the 'below 30'.

Table-3: Occupation-wise Distribution of the Respondents

	Frequency	Percent	Cumulative Percent
Service	32	37.2	37.2
Professional practice	52	60.5	97.7
Others	2	2.3	100.0
Total	86	100.0	

A greater proportion of the respondents are engaged in professional practice.

Table-4: Gender-wise Distribution of the Respondents

	Frequency	Percent	Cumulative Percent
Male	59	68.6	68.6
Female	27	31.4	100.0
Total	86	100.0	

A greater proportion of the respondents are male.

Table-5: Income-wise Distribution of the Respondents

	Frequency	Percent	Cumulative Percent
Below 250000	11	12.8	12.8
250000-500000	27	31.4	44.2
500001-750000	20	23.3	67.4
750001-1000000	10	11.6	79.1
Above 1000000	18	20.9	100.0
Total	86	100.0	

The majority of the respondents fall in the income group of 250000-500000.

Second Part: *Reliability Statistics*

Table-6: Reliability Statistics

Cronbach's Alpha	No. of Items
.900	16

Table-6 indicates that the Cronbach's α (*alpha*) of 16 likert scale statements is .900 reflecting high internal consistency and interrelatedness among them.

In order to understand whether the different demographic variables like the qualification, the occupation, the gender of the respondents and the income of the respondents cast a significant impact on all the variables constituting Modifications in LLP Legislation in India for Protection of the Stakeholders' Interest, Pearson Chi-square Test or Fisher's Exact Test has been performed using SPSS version 20. Generally Pearson Chi-square test is used to study the independence of different attributes. But in a situation when the expected count is less than 5 in more than 20% of the cells in a crosstab or in a contingency table, Fisher's Exact test is used conventionally in statistics. Thus depending upon the circumstances, either Pearson Chi-square test or Fisher's Exact test has been referred to.

In the table given below, the Asymp. Sig. (2-sided)/ Exact Sig. (2- sided) or the p value of each variable is shown with respect to the independent demographic variables such as the qualification, the occupation, the gender and the income level of the respondents. The tests of hypothesis are being performed at a significance level of 5%. If the p value is less than .05 in any case, then the Null Hypothesis gets rejected and the Alternative Hypothesis gets accepted. The Null Hypothesis and the Alternative Hypothesis for the different statements or variables are of the following pattern.

Null Hypothesis (H_0)–The concerned demographical variable (qualification / occupation/ gender / income level) has no impact on the opinion expressed by the statements.

Alternative Hypothesis (H_1)–The concerned demographical variable (qualification / occupation/ gender / income level) has an impact on the opinion expressed by the statements.

Table-7: Indicators of the Relevant Aspects

Statements	**Qualification (p value)**	**Occupation (p value)**	**Gender (p value)**	**Income level (p value)**
It is appropriate to retain personal liability of the partners of an LLP who have the responsibility of maintaining quality assurance mechanism in the LLP.	1.000	.567	.857	.329
The proposal to retain personal vicarious liability for the partners assuming supervisory roles in the LLP would act as disincentive for them	.684	.814	.306	.680

In India, it would be appropriate for partners of an LLP to face clawback requirement.	.331	.871	.373	.700
It is appropriate for an innocent partner of an LLP to withdraw asset from LLP between the time a claim is made against the LLP and the time it is determined	1.000	.749	.186	.156
In India, LLPs should be subjected to the maintenance of minimum amount of liability insurance.	.464	.763	.271	.186
The fixation of minimum amount of liability insurance should be left to the governing bodies of the relevant professions.	.507	.354	.386	.142
For the internal governance of the LLP, detailed rules should be prescribed by the statute.	1.000	.698	.390	.277
Partners of an LLP should be allowed to provide secured loans to the LLP	.911	.704	.255	.484
It is appropriate to have a body corporate as a partner in an LLP	.299	.406	.411	.482
The disqualification criteria for company directors in the Companies Act should apply to the partners of an LLP.	.173	.897	.303	.275
The Partner of an LLP may be allowed to transfer his/her economic interest only and not his/her partnership status.	.479	.243	.610	.532
The transfer of a partner's economic interest in an LLP should require consent of the other partners.	.877	.633	.299	.552

A company should announce its conversion to LLP publicly so that the third parties are aware of the change in its status.	1.000	.818	.122	.069
The capital contributed to the LLP should not be less than the capital remaining in the company at the time of such conversion.	.690	.646	.261	.225
A foreign LLP, which is incorporated out of India, may have a name similar to an LLP in India	.488	.860	.029	.482
An unregistered partnership firm should be prevented from converting to an LLP.	.021	.072	.014	.261

Thus, from Table-7, it is observed that only in 3 cases out of 64 cases, there is an existence of impact of the demographic variable on the concerned variables. Hence, the following Alternate Hypotheses get accepted.

i. *As the p value is less than .05 i.e. .029, the Alternate Hypothesis is accepted indicating that Gender has an impact on the opinion that a foreign LLP, which is incorporated out of India, may have a name similar to an LLP in India.*

ii. *As the p value is less than .05 i.e. .021, the Alternate Hypothesis is accepted indicating that Qualification has an impact on the opinion that an unregistered partnership firm should be prevented from converting to an LLP.*

iii. *As the p value is less than .05 i.e. .014, the Alternate Hypothesis is accepted indicating that Gender has an impact on the opinion that an unregistered partnership firm should be prevented from converting to an LLP.*

Third Part: ***Factor Analysis using Principal Component Analysis (PCA)***

Table-8: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.876
Bartlett's Test of Sphericity	Approx. Chi-Square	565.048
	df	120
	Sig.	.000

Table-9: Communalities

	Initial	Extraction
It is appropriate to retain personal liability of the partners of an LLP who have the responsibility of maintaining quality assurance mechanism in the LLP.	1.000	.385
The proposal to retain personal vicarious liability for the partners assuming supervisory roles in the LLP would act as disincentive for them	1.000	.205
In India, it would be appropriate for partners of an LLP to face clawback requirement.	1.000	.464
It is appropriate for an innocent partner of an LLP to withdraw asset from LLP between the time a claim is made against the LLP and the time it is determined	1.000	.235
In India, LLPs should be subjected to the maintenance of minimum amount of liability insurance.	1.000	.598
The fixation of minimum amount of liability insurance should be left to the governing bodies of the relevant professions.	1.000	.361
For the internal governance of the LLP, detailed rules should be prescribed by the statute.	1.000	.522
Partners of an LLP should be allowed to provide secured loans to the LLP	1.000	.359
It is appropriate to have a body corporate as a partner in an LLP	1.000	.399
The disqualification criteria for company directors in the Companies Act should apply to the partners of an LLP.	1.000	.579
The Partner of an LLP may be allowed to transfer his/her economic interest only and not his/her partnership status.	1.000	.404
The transfer of a partner's economic interest in an LLP should require consent of the other partners.	1.000	.535
A company should announce its conversion to LLP publicly so that the third parties are aware of the change in its status.	1.000	.583

The capital contributed to the LLP should not be less than the capital remaining in the company at the time of such conversion.	1.000	.410
A foreign LLP, which is incorporated out of India, may have a name similar to an LLP in India	1.000	.300
An unregistered partnership firm should be prevented from converting to an LLP.	1.000	.312
Extraction Method: Principal Component Analysis.		

Table-10: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1.	6.652	41.578	41.578	6.652	41.578	41.578
2.	1.243	7.768	49.345			
3.	1.057	6.609	55.954			
4.	1.015	6.345	62.299			
5.	.859	5.369	67.668			
6.	.774	4.839	72.507			
7.	.699	4.370	76.877			
8.	.635	3.967	80.844			
9.	.566	3.536	84.381			
10.	.493	3.078	87.459			
11.	.481	3.003	90.462			
12.	.407	2.541	93.003			
13.	.374	2.338	95.342			
14.	.302	1.886	97.228			
15.	.258	1.611	98.839			
16.	.186	1.161	100.000			
Extraction Method: Principal Component Analysis.						

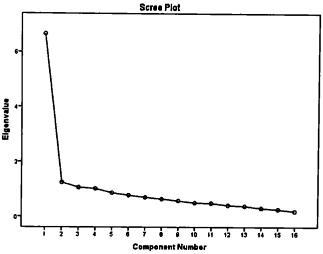

Table-11: Component Matrix

	Component
	1
It is appropriate to retain personal liability of the partners of an LLP who have the responsibility of maintaining quality assurance mechanism in the LLP.	.621
The proposal to retain personal vicarious liability for the partners assuming supervisory roles in the LLP would act as disincentive for them	.453
In India, it would be appropriate for partners of an LLP to face clawback requirement.	.681
It is appropriate for an innocent partner of an LLP to withdraw asset from LLP between the time a claim is made against the LLP and the time it is determined	.484
In India, LLPs should be subjected to the maintenance of minimum amount of liability insurance.	.773
The fixation of minimum amount of liability insurance should be left to the governing bodies of the relevant professions.	.601
For the internal governance of the LLP, detailed rules should be prescribed by the statute.	.722
Partners of an LLP should be allowed to provide secured loans to the LLP	.599

It is appropriate to have a body corporate as a partner in an LLP	.632
The disqualification criteria for company directors in the Companies Act should apply to the partners of an LLP.	.761
The Partner of an LLP may be allowed to transfer his/her economic interest only and not his/her partnership status.	.636
The transfer of a partner's economic interest in an LLP should require consent of the other partners.	.732
A company should announce its conversion to LLP publicly so that the third parties are aware of the change in its status.	.764
The capital contributed to the LLP should not be less than the capital remaining in the company at the time of such conversion.	.640
A foreign LLP, which is incorporated out of India, may have a name similar to an LLP in India	.548
An unregistered partnership firm should be prevented from converting to an LLP.	.559
Extraction Method: Principal Component Analysis.	
a. 1 component extracted.	

Table-8 indicates Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity. Here, the KMO statistic is .876, suggesting that the sample is adequate for generation of meaningful factors. Bartlett's test checks the Null Hypothesis i.e., whether the original correlation matrix is an identity matrix or not. Since here, the actual significance value i.e. $p < .001$ (less than .05), the Null Hypothesis is rejected and the Alternate Hypothesis is accepted. Thus, there exists correlation among the 16 observed variables. Table-9 gives the communalities of all the observed variables before and after extraction. PCA works with an assumption that all variance is common and hence the initial communalities of all the variables are 1. After extraction, the communalities of the different variables indicate the portion of variance explained by the retained factors. Thus the retained component will represent .385 unit of variance of the variable representing retention of the personal liability of the partners of an LLP who have the responsibility of maintaining quality assurance mechanism, .205 unit of variance of the variable representing retention of personal vicarious liability for the partners assuming supervisory roles, .464 unit of variance of the variable representing clawback requirement of the partners of an LLP, .235 unit of variance of the variable representing withdrawal of asset from LLP between the time a claim is made against the LLP and the time it is determined, .598 unit of variance of the variable representing maintenance of minimum amount of liability insurance, .361 unit of variance of the variable representing fixation of minimum amount of liability insurance by the governing bodies of the relevant professions,

.522 unit of variance of the variable representing for the internal governance of the LLP, detailed rules prescribed by the statute, .359 unit of variance of the variable representing partners of an LLP allowed to provide secured loans to the LLP, .399 unit of variance of the variable representing appropriateness of a body corporate as a partner in an LLP, .579 unit of variance of the variable representing application of the disqualification criteria of company directors applicable to the partners of an LLP, .404 unit of variance of the variable representing the Partner of an LLP may be allowed to transfer his/her economic interest only and not his/ her partnership status, .535 unit of variance of the variable representing the transfer of a partner's economic interest in an LLP should require consent of the other partners, .583 unit of variance of the variable representing announcement of a company of its conversion to LLP publicly, .410 unit of variance of the variable representing the capital contributed to the LLP should not be less than the capital remaining in the company at the time of such conversion, .300 unit of variance of the variable representing similarity of a name of a foreign LLP with an LLP in India and .312 unit of variance of the variable representing prevention of an unregistered partnership firm from converting to an LLP. Table 10 gives the eigen values of all components before and after extraction. It is found that 4 components should be retained explaining 62.299% of the cumulative variance. But if the table is observed closely, one shall find that Component 1 has the highest eigen value of 6.652 and it explains 41.578% of the variance. On the other hand, the remaining 3 components have nominal eigen values when compared with Component 1 and they explain only 20.721% of the variance. It is for this reason, it has been decided to retain only Component 1 because it explains the significant amount of variance in the dimension. This decision can be also verified with the help of a scree plot as given above with each component on the horizontal axis and the eigen values associated with them on the vertical axis. In the given scree plot, it is observed that the major break is occurring at Component 2 and again it is the Component 1 that is retained. This indicates that all the concerned variables represent one single dimension i.e., Modifications in LLP Legislation in India for Protection of Stakeholders' Interest. There is no scope for rotation of components because one component is extracted and retained. Table 11 signifies the loadings of each variable on the Component 1. The factor loadings indicate the correlation between the variables and the component. The Component Matrix reflects that maintenance of minimum amount of liability insurance is the most important variable in this dimension with a factor loading of .773.

7. Conclusions

It is felt appropriate to retain personal liability of the partners who have the responsibility of maintaining quality assurance mechanism in an LLP. This change may be initiated by the legislators in India in the LLP Act, 2008 so that the overall quality of the LLP's activities is properly maintained by the partners and there is a continuous review of the same. This move is expected to increase the personal incentive of the concerned partner to protect the stakeholders' interest. Another school of thought suggests that this would discourage the partners to assume the responsibility of maintaining quality assurance mechanism in an LLP. The legislators may play an active role in this regard to incorporate some provision where all the partners at some point of time will have to compulsorily assume such responsibility by some way of mandatory rotation. Personal vicarious liability should also be imposed on the partners assuming supervisory roles to increase their alertness. This may again induce the senior partners to shift this responsibility to the junior partners not capable to take this responsibility (Alberta Law Reform Institute, 1998). To prevent this, again some form of mandatory rotation and eligibility criteria for being a supervisor may be provided in the statute. The LLP Act, 2000 and the LLP Regulations, 2001 of the U.K. contain the clawback requirement to meet the claims of the creditors in case of the dissolution of the LLP and also to prevent the members to withdraw fund from the LLP in the event of its misfortune. The provision is that in the event of the dissolution of the LLP, the partners who have withdrawn funds in the form of share of profits, salary, etc., in two years immediately preceding the date of winding up should be required to bring in the required amount. The clawback requirement can only be enforced if the partners know or have reasonable doubt that the LLP will be unable to repay its debts at the time of withdrawal or will become so after the withdrawal of the funds taking together any other withdrawal of the other partners (Freedman and Finch, 2002). This provision may be considered by the legislators in India for incorporation in the LLP Act, 2008 after considering the form of assets withdrawn that will trigger clawback and the manner of determination of the difficulty of the LLP at the time of withdrawal by the partners. It is felt that it is not appropriate for a partner to withdraw funds between the time a claim is made by a third party against an LLP and the time when it is properly determined so that the liquidity position remains unaffected to meet the stakeholders' claims. LLPs in India should compulsorily maintain minimum amount of liability insurance so that a person suffering damage from professional malpractice will have claim against the assets of the partners who are at fault, assets of the firm and the applicable liability insurance coverage (Alberta Law Reform Institute, 1998). It is also felt that, instead of having a broad framework of default rules on internal governance of LLP, it is better to have detailed rules out of which some are compulsory in nature for all types of LLPs so that there is lesser scope of discrimination between a large-sized and a small-sized LLP. Again, it is observed that if a partner provides secured loan to an LLP, then it may cast a negative impact on the claims of third parties against the LLP especially in case of winding up of an LLP. These are some of the modifications that should be incorporated in the Act.

It is found that there is no significant impact of the demographic variables on the observed variables except only in 3 cases. Hence, no such pattern has been identified with regard to the influence of demographic variables on the observed variables. All the variables belong to the same dimension and maintenance of minimum amount of liability insurance requirement by an LLP is the most important modification to protect the stakeholders' interest as found from empirical survey.

8. Limitations of Study

1. The present study is based on the perceptions of professionals, namely, CAs and CSs from Kolkata. Other categories of professionals, namely, CMAs, Advocates, etc., are not included in the sample.
2. The research is based only on the perceptions of professionals from Kolkata and not on a national scale.
3. Owing to time and financial constraints, the method of simple Convenience Sampling has been used for selection of professionals constituting the sample.
4. The study is based on the perceptions of the professionals gathered at a single point of time. Study of any change in the perceptions of the professionals over a period of time has not been done.

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Nature and Dimension of Disparities in the State of Primary Education in West Bengal

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Abstract: This paper critically examines the nature and dimension of the disparities in the state of primary education in West Bengal. We have actually tried to find out the proximate factors behind regional disparities and other inequities in respect of the diffusion of primary education in the state. This paper is exclusively based on secondary data. It is found that although the State has experienced a remarkably slow rate of spread of education during the first two decade after independence; the rate of spread of education has gathered momentum since then especially after the implementation of policy of universalization of primary education. However, the rate of change in the spread of primary education has experienced a fluctuating pattern across time both at the aggregative level and across gender. Further, we find that the rural-urban divides in respects of the spread of the Primary Education, which was very high initially after independence, has been reduced steadily. Interestingly, the Male-Female divides in respect of attainment of primary education in the State has also been fallen steadily, albeit the rate of fall in the same in urban area is found to be much faster than that in rural areas. It seems that the proximate factors behind such divide and differential in rate of fall in gender divide pertaining to the attainment of primary education are basically economic and social. This is also supported by the empirical result of our basic discrimination model. As far as the policy implication of our study is concerned, we may argue for more allocation of resource for the development of infrastructure for primary education and for the enhancement of the social consciousness of the people.

Key-words: Disparity in primary education, disparity in rural-urban, disparity in male-female, rural-urban differential.

1. Introduction

Education plays an immense role not only on the socio-economic and political transformation of the society but also on the economic growth of the society. In fact education generates moral value and ethics within the human beings, which in turn, provides empowerment of the people of the society so as to overcome the vulnerability and marginalization in the modern society. Further it is well known that the primary education-its equity and quality, has a strong spillover effect on the equity and quality of higher education in a society. Obviously, the equity and quality of education of a society involves a cumulative process beginning with the primary education. So, primary education of the people in a society can be treated as a pillar for the erection of the educational structure of the society. It is well recognized that the avowed objectives of the development strategy of India immediately after her emancipation of from the British Colonial rule were, the ending of poverty, ignorance, and inequality. Ironically, even after the elapse of sixty seven years of our independence we find that only-74.04% of our total populations are literate and vast majorities of our people still suffer from ignorance. Further we find sharp disparity in the spread of education not only across the states of India but also across sex, caste, and across the rural and urban areas of our country. For instance, in case of male, the literacy rate is 82.1% where as in case of female; the literacy rate is found to be 65.5% in 2011. Further we find strong disparity in the spread of education both in urban and rural area. In case of urban-male, we find that the literacy rate is 89.7%, whereas in case of urban female, the literacy rate is 79.9%. But if we consider rural area, the scenario is rather pessimistic such that while rural male literacy rate is 78.6%, the rural female literacy rate is only 58.8%. Further, we find more disappointing picture if we compare the overall literacy rate between rural (68.91%) area and urban (84.98%) area in our country. So the vast majority people in rural area still remain illiterate.

Obviously, West Bengal is also not an exception to this scenario. Though the literacy rate in West Bengal has always been higher than all Indian average such that it ranks 20 among 35 states in 2011, the improvement in literacy has been relatively slow especially for women. In fact in West Bengal we find the persistence of considerable inter district variations sex wise and cast wise variation, and also a sharp rural urban variations in respect of the spread of primary education since independence. The scenario of West Bengal pertaining to the primary education also reflects almost the same tradition. Under this backdrop we in our study, have made an intensive investigation on the dynamics of the state of primary education and its disparities across the district, regions (rural-urban), sex (Male-Female) and so as to find out the proximate explanatory factors behind such disparity.

There is as such no intensive study on the dynamics of the status of primary education in West Bengal excepting the study made by Rana, et-al. (2003) (2009), and the study made by the Pratichi Trust (2002). However, there are few studies on the status of elementary as well as primary education across the states, as well as at the aggregative level. The most important of the studies are the studies made by Pranajape (2007), Azim (2005), Sood (2003), etc. Most of these studies found on regional and gender disparities in the state of primary education in West Bengal.

Infact brief review of literature reveals that there is as such no intensive study on the state of primary education and it's dynamics in West Bengal. So we have undertaken an intensive study in order to capture the nature and dimension of the disparities in the state of primary education in West Bengal. We, in our study have also tried to find out the correlates behind such regional disparities and other inequities in respect of the diffusion of primary education in the state.

This paper centre round the following questions :

i) What has been the nature and dimension of the primary education in West Bengal?

ii) What are the nature and degree of disparities in the spread of primary education across the district of West Bengal?

iii) What has been the nature of rural-urban disparities in the state of primary education at the inter-district level?

On the basis of these questions we form the following hypotheses which have been substantiated in our study :

a) There is a sharp cross-district as well as cross-region (rural-urban) disparities in the spread of primary education in the state.

b) It seems that there is tremendous inequity in the state of primary education across gender, region and castes in the state.

c) The regional disparities and the inequity in the level and growth of primary education in the state are primarily the outcome of the economic factors and partly that of social factors.

This paper is designed as follows:

Section 2 discusses the data and methodology; section 3 analyses the state of Primary Education in West Bengal since independence. Section 4 is devoted to the analysis of nature of disparity in spread of Primary Education and the proximate factor behind it. Finally, section 5 is summarising the concluding observations.

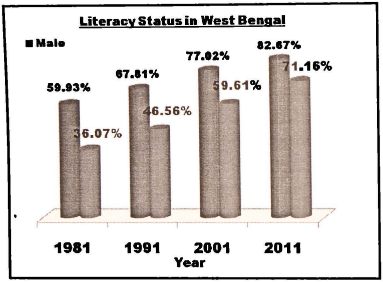
2. Data and Methodology

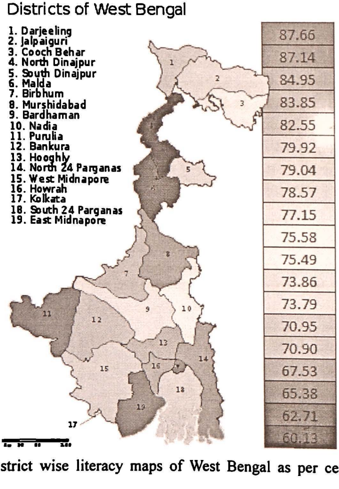
This study is primarily based on the Secondary data available from various census reports of the Goverment of India; Statistical Abstract of the Goverment of West Bengal, District Statistical Hand Book of Goverment of West Bengal and various issues of Economic Review, the Census Report, NSS Report, Economic Survey, Demographic and Health Surveys, Human Development Report, Books, Journal, Magazine, etc. We have used conventional statistical tools for analytical purpose. However we have tried to make a quantitative analysis by using a very simple model of discrimination analysis.

3. Status of Primary Education in West Bengal

In this section we analyse the present state of primary education in West Bengal and the trend in the expansion of the same at the aggregate level.

It is evident from the bar diagram below that the male literacy rate has been increased from 59.93% in the year 1981 to 82.67% in the year 2011 with an average increase of 5.69% per decade whereas female literacy rate has been increased from 36.07% in the year 1981 to 71.16% in the year 2011 with an average increase of 8.77% per decade.





Source: District wise literacy maps of West Bengal as per census 2011.

West Bengal has a total area of 88,752 sq kms and it has a total population of 9,12,76,115, of which total male population is 4,68,09,027 and total female population is 4,44,67,088. 7.55% of India's population lives in West Bengal with a decadal growth rate of 13.93% (All India figure of 17.64%). The average annual exponential growth rate in West Bengal is 1.31% which is less than the all India figure of 1.64%. West Bengal ranked fourth among the states as far as population is concerned, whereas area wise it ranked fourteenth. West Bengal has a density of 1030 person/square km which is the highest in the country. As a result of partition, the influx of refugees put a heavy pressure on land.

Table-1

	Population	Literacy	Percent	Density	Sex Ratio
Male	468,09,027	3,45,08,159	82.67%	529	947
Female	444,67,088	281,06,397	71.16%	501	
Total	912,76,115	6,26,14,556	77.08%	1030	

Source: Census 2011

As per census data 2011 Schedule Cast constituted approximately 23.51 percentage (total SC population is 2, 14, 63,270) of total population and in the case of Schedule tribe this figure is approximately 5.80 percentage (total ST population is 52, 96,953) of total population.

As per 2011 census, the urban population in West Bengal is 2,90,93,002, which is about 31.81% of total population and increased from 27.97% in 2001. Whereas total rural population is 6, 21, 83, 113 which is about 68.13% of total population. The decadal population growth in rural area is 7.68% whereas in urban area decadal population growth is 29.72%. This indicates a rapid urbanization in West Bengal. West Bengal has 19 districts, 341 blocks and 40997 villages in the state according to census 2011.

West Bengal is one of the few states which has shown maximum declining trend in absolute number of child population in 2011 in comparison with figures of census 2001. The child population in West Bengal now stands at 10,112,599 (5,187,264 male and 4,925,335 female). A negative change in population in age group 0-6 years has been witnessed since 1991. The decadal change in child population (age group 0-6 years) was -148,075 in 2001 (around 14%) and -1,301,623 in 2011 (around 11.7%).

West Bengal's proverbial diversity applies in particular to literacy and education. At one end of the scale, remaining uneducated is almost unthinkable for the elite (General upper middle class) in Kolkata, or the upper middle class in the suburban or urban areas in all over West Bengal. At the other end, literacy rate in 1981 was as low as 2.25 percent among the Scheduled Tribe Female in rural Birbhum and 2.56 per cent among the Scheduled Tribe Female in rural Burdwan.

The progress of literacy of West Bengal during the last eleven decades from 1901-2011 in comparison to all India can be seen from the following table:

Table-2 : Progress of Literacy in West Bengal (1901-2011) (figure in %) vis-à-vis all India

Year	Male (WB)	Decadal percent point Change in Male literacy	Female (WB)	Decadal percent point Change in Female literacy	Male-female gap (WB)	WB Aggregate	Decadal percent point Change in WB	Indian Aggregate	Decadal percent point Change in India	WB India gap in aggregate
1901	17.9		1.2		16.7	9.8		5.35		4.45
1911	19.1	6.70	1.7	41.67	17.4	10.8	10.2	5.92	10.7	4.88
1921	21	9.95	2.5	47.06	18.5	12.3	13.9	7.16	20.9	5.14
1931	20.4	-2.86	3.8	52.00	16.6	12.4	0.8	9.5	32.7	2.9
1941	29.3	43.63	8.3	118.42	21	19.7	58.9	16.1	69.5	3.6
1951	34.1	16.38	12.7	53.01	21.4	24.6	24.9	16.67	3.5	7.94
1961	46.6	36.66	20.3	59.84	26.3	34.46	40.1	24.02	44.1	10.44
1971	49.6	6.44	26.6	31.03	23	38.86	12.8	29.45	22.6	9.41
1981	56.9	14.72	34.4	29.32	22.5	48.65	25.2	36.23	23	12.42
1991	67.8	19.16	46.6	35.47	21.2	57.7	18.6	42.84	18.2	14.86
2001	77	13.57	59.6	27.90	17.4	68.64	19	64.84	51.4	3.81
2011	82.67	7.36	71.16	19.40	11.51	77.08	12.3	74.04	14.2	3.04
MAX		43.63		118.42	26.3		58.87		69.47	14.9
Mean		17.94		52.79	19.5		21.5		28.25	6.9
SD		13.60		26.80	3.89		15.99		19.58	4.03
CV		75.81		50.76	19.97		74.35		69.3	58.28

Source: Census reports

The level of literacy in West Bengal was as low as 9.8% for persons in the age group 5+ in 1901, whereas in India it was 5.35%. The gap was 4.45. There was little increase in literacy level until 1931 when it reached the level of 12.4%. By 1951 the literacy rate was

24.6%. Thereafter, literacy rate increased continuously to reach the level of 46.2% by 1981. In 1991, 2001 and 2011, the age group of 0-6 was excluded from the literate persons. The literacy rate were respectively, 57.7%, 68.64% and 77.08% which were higher than the corresponding all India average of 42.84%, 64.84% and 74.04% and as such reaching an all-time highest gap 14.86 percent point in 1991 and thereafter declining to 3.81 in 2001 and 3.04 in 2011.This suggests that the extra advantage of being pioneer and starter has now evaporated. If this trend continues, it may happen that the Literacy rate of All India aggregate may supersede the Literacy rate of West Bengal in the near future.

Now, if we consider the Decadal percent point change, we observe that West Bengal has 21.50 average decadal percent point change with Standard Deviation (SD) of 15.99 and Coefficient of Variation (CV) 74.35%, whereas the average all India decadal percent point change is 28.25 with Standard Deviation(SD) of 19.58 and Coefficient of Variation (CV) 69.30%.

The gap between male and female literacy has been particularly striking. Since 1951 there had been a continuous increase in the gap between male and female literacy rate until 1961 when it reached 26.3%. The only exception was 1931. Since 1961, the gap has been lessening, although the female literates were still lagging behind the male literates by 17.4% in 2001 and by 11.51% in 2011. But if we go by rural-urban segment, the picture will be different.

RURAL–URBAN

Table-3: The population growth in rural-urban areas of India and West Bengal

	Population In Cores			Decadal Growth (%)		
	1991	2001	2011	1991-2001	2001-2011	Difference
India	84.63	102.9	121	21.5	17.6	-3.9
Rural	62.87	74.3	83.3	18.1	12.2	-5.9
Urban	21.76	28.6	37.7	31.5	31.8	0.3
West Bengal	6.8	8.02	9.13	17.9	16.3	-1.6
Rural	4.94	5.77	6.22	16.8	7.8	-9.0
Urban	1.87	2.24	2.91	19.79	29.9	10.1

Source: Census 2011

The slowing down of the overall growth rate of population is due to the sharp decline in the growth rate in rural areas, while the growth rate in urban areas remains almost the same but in case of West Bengal is slightly different.

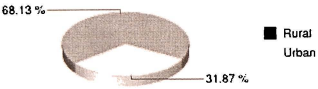
Table-4: Rural- Urban Distribution of Population (%)

	1901	1951	2011
Rural Population Share of India	89.2%	82.7%	68.8%
Urban Population Share of India	10.8%	17.3%	31.2%
	100	100	100

Source: Census 2011

For the first time since Independence, the absolute increase in population is more in urban areas than in rural areas: Rural–Urban distribution: 68.84% & 31.16%. Level of urbanization increased from 27.81% in 2001 Census to 31.16% in 2011 Census. The proportion of rural population declined from 72.19% to 68.84%.

Rural Urban West Bengal



Source: Census 2011

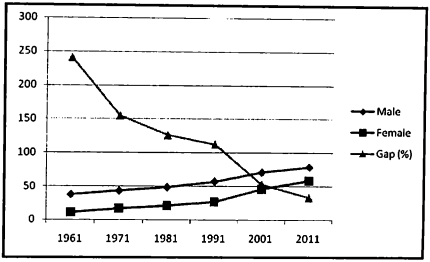
The number of Literates in India is 778.5 million in the year 2011, divided as: Rural: 493.0 million, Urban: 285.4 million. There has been an increase of 217.8 million literates since 2001. Out of this; 131.1 million were in rural areas and 86.6 million in urban areas.

Table-5: Rural (India) Male–Female Literacy Gap (%)

Year	Male	Female	Gap (%)
1961	37.49	11	240.8
1971	42.98	16.86	154.9
1981	48.26	21.35	126
1991	56.96	26.79	112.6
2001	70.7	46.13	53.3
2011	78.57	58.75	33.7

Source: Census 2011

From the above table it is observed that rural India male-female gap has been reduced from 240.8 to 33.7 though the pace of increase in Female Literacy Rate is perceptibly higher in Rural Areas, it has increase from 46.13% in 2001 to 58.75% in 2011 and Gender Gap in Literacy Rate in rural India has narrowed down considerably over the censuses but continue to remain high (33.7%). This can be viewed from the graph shown below:



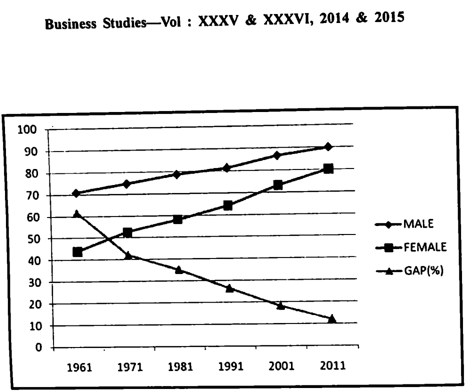
Source: Census 2011

Table-6: Urban (India) Male-Female Literacy Gap (%)

Year	Male	Female	Gap (%)
1961	70.77	43.75	61.76
1971	74.64	52.54	42.06
1981	78.56	58.07	35.29
1991	81.09	64.05	26.60
2001	86.27	72.86	18.41
2011	89.67	79.92	12.20

Source: Census 2011

From the above table it is observed that there has been a constant increase in both Male and Female Literacy Rate in Urban areas of India, the steady increase in the Female literacy Rate has reduced the Gender Gap significantly in Urban India, and the Gender Gap in Literacy Rate has narrowed down considerably over the years but still continue to be high (12.2%).



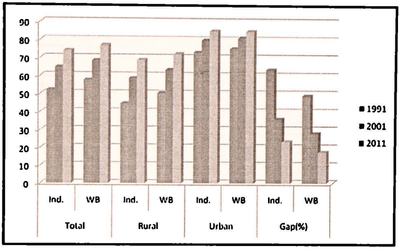
Source: Census 2011

Table-7: Rural-Urban Literacy Gap

	Total		Rural		Urban		Gap (%) *	
	Ind.	WB	Ind.	WB	Ind.	WB	Ind.	WB
1991	52.2	57.70	44.7	50.50	73.1	75.27	63.53	49.05
2001	64.8	68.64	58.7	63.42	79.9	81.25	36.12	28.11
2011	74.04	77.08	68.9	72.13	85.0	84.78	23.37	17.54

Source: Census 2011

From the above table it is seen that at national level the aggregate literacy rate is increasing gradually. In West Bengal, though the literacy rate is marginally higher than national level, the growth rate shows a similar trend. Both at national level and West Bengal, the urban literacy rate is good, about 85%. Till 2001, the rate of growth in West Bengal was better than India, but, in 2011, it has slightly decreased than the national level. The rural literacy rate shows an increase both in West Bengal and national level. Here West Bengal still enjoys a gap of 12.65% in its favour.



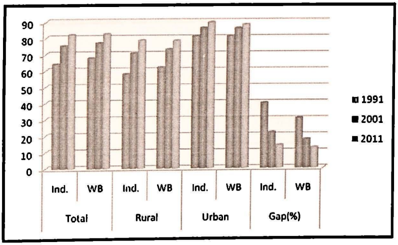
Source: Census 2011

Table-8: Rural-Urban Male Literacy Gap

	Total		Rural		Urban		Gap (%)	
	Ind.	WB	Ind.	WB	Ind.	WB	Ind.	WB
1991	64.1	67.8	57.9	62.05	81.1	81.19	40.07	30.7
2001	75.3	77.0	70.7	73.13	86.3	86.13	22.07	17.78
2011	82.1	82.67	78.6	78.44	89.7	88.37	14.12	12.66

Source: Census 2011

From the above table it is observed that the male literacy rate shows a trend to increase, though the rate of increase is low and the urban males are more literate than the rural male by 12.66%.



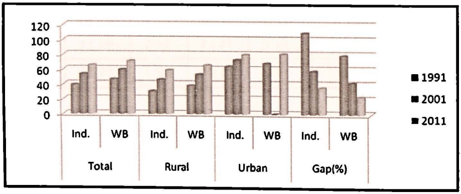
Source: Census 2011

Table-9: Rural-Urban Female Literacy Gap

	Total		Rural		Urban		Gap (%)	
	Ind.	WB	Ind.	WB	Ind.	WB	Ind.	WB
1991	39.3	46.6	30.6	38.12	64.0	68.25	109.15	79.04
2001	53.7	59.6	46.1	53.16	72.9	75.74	58.13	42.48
2011	65.5	71.16	58.8	65.51	79.9	80.98	35.88	23.61

Source: Census 2011

From the above table it is observed female literacy rate in rural areas is abnormally lower than literacy rate in urban areas. A similar trend is found both at the national level and in West Bengal. In West Bengal, female literacy rate is marginally higher than at the national level. The urban female literacy rate of national level has crossed the West Bengal rate and the rural –urban female literacy gap is decreasing but has not yet reached a satisfactory level. The gap is 23.61% in West Bengal against 35.88% in India.



Source: Census 2011

4. Analysis of nature of disparity in the state of primary education in West Bengal

Table-10: District wise Literacy Rate 2001-2011 and Decadal present change

Rank	District			Decadal
		2001	2011	Change%
1.	Purba Medinipur	80.16	87.66	9.36
2.	Kolkata	80.86	87.14	7.77
3.	North 24 Parganas	78.07	84.95	8.81
4.	Howrah	77.01	83.85	8.88

Table-10: District wise Literacy Rate 2001-2011 and Decadal present change (*Contd.*)

Rank	District	2001	2011	Decadal Change%
5.	Hooghly	75.11	82.55	9.91
6.	Darjeeling	71.79	79.92	11.32
7.	PaschimMedinipur	70.41	79.04	12.26
8.	South 24 Parganas	69.45	78.57	13.13
9.	Bardhaman	70.18	77.15	9.93
10.	Nadia	66.14	75.58	14.27
11.	Cooch Behar	66.3	75.49	13.86
12.	Dakshin Dinajpur	63.59	73.86	16.15
13.	Jalpaiguri	62.85	73.79	17.41
14.	Bankura	63.44	70.95	11.84
15.	Birbhum	61.48	70.9	15.32
16.	Murshidabad	54.35	67.53	24.25
17.	Purulia	55.57	65.38	17.65
18.	Maldah	50.28	62.71	24.72
19.	Uttar Dinajpur	47.89	60.13	25.56
	Max			25.56
	Mean			14.34
	SD			5.5
	CV			260.07

Source: Census reports

As already mentioned the overall rate of literacy for all district (6+ age group) was 68.64% in 2001 and 77.08% in 2011. But there is a considerable regional variation in literacy within the State. The rate of literacy of the districts in West Bengal varied between 47.89% and 80.86% in 2001 and between 60.13% and 87.66% in 2011. In 10 districts namely, Uttar Dinajpur, Malda, Murshidabad, Purulia, Birbhum, Jalpaguri, Bankura, Dakhin Dinajpur, Nadia and Coochbihar, the literacy rate are less than the State average literacy rate both in the year 2001 and 2011. The literacy rate is lowest in Uttar Dinajpur and highest in PurboMidnapur in 2011. In 9 districts the literacy rate is higher than the states average literacy rate both in the year 2001and 2011. This analysis shows huge disparities in cross district literacy rate in West Bengal. The following table will depict the situation clearly:

Table-11

Ranking of Districts by Literacy Rate in 2001 and 2011

Rank in 2011	District	Literates 2011	Literates 2001	Literates Rate (%) (Excluding 0-6 age group) 2011	Literates Rate (%) (Excluding 0-6 age group) 2001	Rank in 2001
0.	West Bengal	62614556	47196401	77.08	68.64	0
1.	Purba Medinipur*	3969750	3037106	87.66	80.16	2
2.	Kolkata	3648210	3382103	87.14	80.86	1
3.	North Twenty Four Parganas	7798722	6151527	84.95	78.07	3
4.	Haora	3642617	2895625	83.85	77.01	4
5.	Hugli	4140487	3333988	82.55	75.11	5
6.	Darjiling	1328218	1008288	79.92	71.79	6
7.	Paschim Medinipur*	4173522	3127210	79.04	70.41	7
8.	South Twenty Four Parganas	5639112	4067343	78.57	69.45	9
9.	Barddhaman	5350197	4205146	77.15	70.18	8
10.	Nadia	3524073	2644461	75.58	66.14	11
11.	Koch Bihar	1879984	1386965	75.49	66.30	10
12.	Dakshin Dinajpur	1102355	799479	73.86	63.59	12
13.	Jalpaiguri	2527018	1810083	73.79	62.85	14
14.	Bankura	2264013	1734222	70.95	63.44	13
15.	Birbhum	2175923	1553852	70.90	61.48	15
16.	Murshidabad	4134584	2620538	67.53	54.35	17
17.	Puruliya	1656940	1182284	65.38	55.57	16
18.	Maldah	2136898	1332704	62.71	50.28	18
19.	Uttar Dinajpur	1521933	923477	60.13	47.89	19

Source: Census 2011

*Figures of Paschim Medinipur & Purba Medinipur for 2001 have been recast as erstwhile Medinipur divided into two districts after 2001 Census. Ranking of Districts for 2001 marginally changed accordingly.

Rural-Urban Disparity - Decomposition Model

In this model, we have assumed that the disparities in education, which is measured in terms of Gross enrolment ratios across the rural-urban region of the state is due mainly to differences in income. Now, since the separate data on the rural and urban area are not available, the wage rate for urban and rural area are used, as a proxy of income. The model is as follows:

In this model

$$\text{In}\left(\overline{GER}_R\right)=\hat{\beta}_R\text{In}\left(\overline{W}_R\right)+\varepsilon_R \qquad \text{(Rural Gross Enrolment equation)} \qquad (1)$$

$$\text{In}\left(\overline{GER}_U\right)=\hat{\beta}_U\text{In}\left(\overline{W}_U\right)+\varepsilon_U \qquad \text{(Urban Gross Enrolment equation)} \qquad (2)$$

Therefore, the Rural-Urban Gross Enrolment differential can be written as:

$$\text{In}\left(\overline{GER}_R\right)-\text{In}\left(\overline{GER}_U\right)=\hat{\beta}_R\text{In}\left(\overline{W}_R\right)-\hat{\beta}_U\text{In}\left(\overline{W}_U\right) \qquad (3)$$

If, for a given wage rate, urban students are enrolled according to the enrolment structure of the rural students in the absence of discrimination then the hypothetical Gross Enrolment function of urban students will be

$$\text{In}\left(\overline{GER}_U\right)=\hat{\beta}_R\text{In}\left(\overline{W}_U\right) \qquad (4)$$

Subtracting equation (4) from equation (3) we get

$$\text{In}\left(\overline{GER}_R\right)-\text{In}\left(\overline{GER}_U\right)=\hat{\beta}_R[\text{In}\left(\overline{W}_R\right)-\text{In}\left(\overline{W}_U\right)]+\text{In}\left(\overline{W}_U\right)\left(\hat{\beta}_R-\hat{\beta}_U\right) \qquad (5)$$

The first term of the right hand side denotes the observed endowment difference component and the second term denotes the discrimination component.

Regression Results-Primary Enrolment

Decomposition Model:

Regression results of Rural Gross Enrolment Function in West Bengal in 2001

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.421607548	0.177752924	0.119021	0.1121347
a	Predictors: (Constant), In(W_R)			

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.260652	1.553376		0.811556	0.4306288
In(W_R)	0.795333	0.45717	0.421607548	1.739687	0.1038408
Dependent Variable : In(GER_R)					

Table-12: Decomposition Results for Rural-Urban Primary GER

Components of Decomposition	2001
Amount attributable	2.065
due to endowment (E)	-0.039
due to coefficients (C)	13.615
Shift Coefficient (i.e. difference between the constant terms) (U)	-11.522
Raw Differential : R = E + C + U	2.054
Adjusted Differential : D = C + U	2.093
Endowment as % of total differential : (E/R) × 100	-1.883
Discrimination as % of total differential : (D/R) × 100	101.883

Regression results of Urban Gross Enrolment Function in West Bengal in 2001

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.287498	0.082655	0.021499	0.473173
a	Predictors: (Constant), In(W_U)			

	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	10.52118	9.918287		1.060786	0.305569
In(W_U)	-3.34595	2.878102	-0.2875	-1.16256	0.263173
Dependent Variable : In(GER_U)					

Average Productivity Characteristics of Rural students

$\mathrm{In}\left(\overline{GER}_R\right)$	1.2174512
$\mathrm{In}\left(\overline{W}_R\right)$	3.397253

Average Productivity Characteristics of Urban students

$\mathrm{In}\left(\overline{GER}_U\right)$	-.8638346
$\mathrm{In}\left(\overline{W}_U\right)$	3.44589

5. Conclusion

We critically examined the nature and dimension of the disparities in the state of primary education in West Bengal. Based on the analysis presented above, the following conclusion emerges:

i) After independence, West Bengal has had only moderate success in spreading elementary education among the masses, and the record of West Bengal goes pretty well with the overall trend compared to the all-India average. But, if we consider the Decadal percent point change, we observe that West Bengal has a lower (21.50) average decadal percent point change (with SD of 15.99% and CV of 74.35%), compared to average all India decadal percent point change (28.25) with SD of 19.58% and CV is 69.3%. Though the literacy rate in West Bengal has always been higher than the all-India average, (it ranked 20th among 35 states in 2011), the improvement in literacy has been relatively slow especially for women. If these trends continue, West Bengal may go down in near feature to all-India average as far as spreading of elementary education among the masses is concerned.

ii) It is found that although the State has experienced a remarkably slow rate of spread of education during the first two decades after independence; the rate of spread of education has gathered momentum since then especially after the implementation of policy of universalization of primary education. However, the rate of change in the spread of primary education, as experienced a fluctuating pattern across time and both at the aggregative level and across gender. Although it continues to remain substantially below the average for the empowered states (like Kerala, Karnataka, Maharashtra and others), the gap with the all-India average has narrowed down slightly over the last few decades.

iii) We find that the rural-urban divides in respects of the spread of the Primary Education, which was very high initially after independence, has been reduced steadily since then.A closer look at the spread of primary education for rural and urban areas of the state reveals that a part of the gap can be attributed to the low level of urbanization in the state, as we observe that more than two-third of the total population of West Bengal lives in rural areas. As a result the overall spread of primary education in the state carries an overwhelming weight of the spread of primary education in rural area, which is generally lower than the urban areas. Although, last two census (the census 2001 and 2011), indicates a narrowing down of rural-urban differential.

iv) Interestingly, the Male-Female divides in respect of attainment of Primary Education in the State has also fallen steadily albeit the rate of fall in the same in urban area is found to be much faster than that in rural areas. It seems that the proximate factors behind such divide and differential in rate of fall in gender divide pertaining to the attainment of Primary Education are basically economic and social. This is also supported by the empirical result of our basic discrimination model.

The problem of low rate of spread of education is exaggerated by disparities across different groups and region. Going by the simple logic of average, overall spread of education cannot approach 100 per cent so long as a substantial gap between male-female exists, the gap between rural and urban will exist. The male-female gap in attainment of primary education in the state slightly is lower than that in India as a whole. The gap is more in rural areas than in urban areas. Over the last few decades both male and female attainment in primary education has increased, and the rate of increase even accelerated quite a bit in the past three decades. However, the reduction in the gap between male- female has been rather small. The two trends show a remarkably similar pattern with a remarkably stable vertical distance between the two.

A people's movement for education for all may prove useful for bridging all social and gender gap with the active participation of the community in all-round educational development. To achieve universal elementary education for all and as far as the policy implication of our study is concerned, we argue for more allocation of resource for the development of infrastructure of Primary Education and for the enhancement of the social consciousness of the people.

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